EFFECT OF YOGA-NIDRA ON BLOOD PRESSURE AMONG ELDERLY WITH HYPERTENSION RESIDING AT SELECTED OLD AGE HOMES, COIMBATORE

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The Tamil Nadu Dr. M.G.R Medical University,

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In Partial Fulfillment of the Requirement for the

Award of the Degree of

MASTER OF SCIENCE IN NURSING

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This is to certify that the dissertation entitled **"Effect of Yoga-nidra on Blood Pressure Among Elderly with Hypertension Residing at Selected Old Age Homes, Coimbatore"** is a bonafide work done by **A. Dhivya Bharathi, College of Nursing, Sri Ramakrishna Institute of Paramedical Sciences** in partial fulfillment of the University rules and regulations for award of **M.Sc. Nursing Degree** under my guidance and supervision during the academic year **2016.**

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Abstract

The main aim of the study was to assess the effect of yoga-nidra on blood pressure among elderly with hypertension residing at selected old age homes, Coimbatore. The study was conducted at Universal Peace Foundation and Ozanam Home for Aged. Quasi experimental pretest posttest control group design was adopted for this study. Convenient sampling technique was used to select the study participants. The elderly from one old age home was assigned to experimental group (n=20) and the other to the control group (n=15). Yoga-nidra practice was given for 20 minutes once daily in the morning between 6-8AM for 15 days. Blood pressure measurements were taken on the first and 15^{th} day and was documented. The study showed a significant reduction of mean systolic blood pressure from 154.5 to 130.4 mm of Hg and the mean diastolic blood pressure from 92.2 to 82.8 mm of Hg. The calculated 't' value (for systolic blood pressure = 4.19 and diastolic blood pressure = 3.98) was greater than the table value at 0.001 level of significance. Hence it is concluded that Yoga-nidra is an effective measure to reduce the level of blood pressure among elderly with hypertension residing at old age homes.

INTRODUCTION

Ageing is the organic process of growing older and showing the effects of increasing age. Ageing should be regarded as a normal, inevitable biological phenomenon which brings along two inconvenient events: physiologic decline and disease state. Ageing process is complex and multi-factorial (Park, 2007). In 2010, 100 million people were aged above 60 years and by 2020 it will be 177 million globally (World Health Organization, 2013). Elderly population contributed to 7% of total population of India in 2001 and it will rise to 9% by 2016 (Nataraj VS, 1995). Chronic morbidities like hypertension, liver diseases, heart disease, osteoporosis, gout, diabetes and cancer are becoming common health problems among the elderly population. (Lakatta, 1993)

Hypertension is the most common cardiovascular disease affecting more than one billion people throughout the world. The lifetime risk of developing hypertension is approximately 90% for middle aged and older (55 years and above) men and women. It is a major contributor of stroke, ischemic heart disease, heart failure, renal dysfunction and blindness. It is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India. Hypertension prevalence is less in women than in men of 35-44 years of age. It is similar in both sexes from 45 to 64 years of age and is much higher in women than men over 65 years of age (Anchala, 2014).The study done by Shashank et al on the elderly rural population of Delhi, showing the prevalence of hypertension as 11.25% and this showed a higher prevalence of hypertension in elderly persons in urban area compared to rural area and it also showed a mean age of detecting hypertension was to be 54.2 years. The prevalence of hypertension among males and females was 33.3% and 26.2%.

In the treatment of hypertension, side effects and the patient's perception of them play an important role in success of therapeutic regimen. Distressing side effects of drugs affect health related quality of life of patients, often leading to non-adherence of therapy (Monane, 1996). Moreover, anti- hypertensive drug treatments are expensive and only few people manage to keep their blood pressure under control. Hence, controlling of hypertension by life style modifications are highly recommended either as a primary prevention or as therapy with or without drugs (Deepa, 2012). There are many different types of complementary and alternative treatments believed to be effective for treating hypertension. Scientific evidence indicates that following a diet which is low in saturated fat and salt and rich in complex carbohydrates (vegetables, whole grains, legumes, and fruits), increased physical activity (walking, jogging, cycling, or a combination), and regular practice of relaxation techniques such as Yoga, TaiChi or Qigong, can help to lower high blood pressure.

Yoga-nidra has widespread application in the management of diseases of all kinds. It has been found useful in both acute and chronic conditions especially in degenerative and stress related conditions such as hypertension (Bajpai, 2015). Yoga-nidra is a more efficient and effective form of psychic and physiological rest and rejuvenation. It is a simple, yet, profound practice that induces deep relaxation into the whole body-mind system in a conscious way. It is a powerful technique in which one learns to relax consciously. It is also called as the state of dynamic sleep and it is a systematic method of inducing complete physical, mental and emotional relaxation. (Pandya, 2007)

Blood pressure increases by sustained activation of Flight and Fight response of the body. Yoga-nidra effectively switches off the response and brings adrenaline levels down, thus reducing the blood pressure. It also relaxes the chronic stress induced sustained muscular contraction. This sustained muscular contraction sends hostile signals to the brain, it does secrete stress hormones associated with stress and high B.P. it is possibly reverted by constant yogic practices (Danilo, 2015). Regular yoga-nidra will reduce the aldosterone and vasopressin which is a potent vasoconstrictor secreted from brain. A Controlled study conducted by Lekh Raj Bali and published in med. 41 (8) Dec. 1979 at the Langley Porter Neuropsychiatry institute in California, found that there is a reduction in blood pressure and anxiety levels in hypertensive patients for 12 months after yoga-nidra training.

1.1 Need for the Study

A precise definition of hypertension is difficult to establish, however the seventh Joint National Committee on detection, evaluation and treatment of high blood pressure (JNC VII 2003) defined hypertension as a systolic blood pressure (SBP) of 140mmHg or greater and diastolic blood pressure (DBP) of 90mmHg or higher. The study done by Nataraj VS et al among the elderly in rural community in Tamil Nadu, found that the prevalence of hypertension among males is 7.71% and females is 10.6%. Worldwide raised blood pressure is estimated to cause 7.5 million deaths, about 12.8% of the total of all deaths. Overall prevalence for hypertension in India is 29.8%. About 33% urban and 25% rural Indians are hypertensive. 25% rural and 42% urban Indians are aware of their hypertensive

status. Only 25% rural and 38% urban are being treated for hypertension (Anchala, 2014). Prevalence of hypertension among elderly in Tamil Nadu is 26.9% and that of in Coimbatore is 36.45% (Males- 33.3%, Females- 26.2%).

Hypertension is a significant and often asymptomatic chronic disease, which requires optimal control, persistent adherence to prescribed medications and lifestyle modifications to reduce the risks of cardiovascular, cerebrovascular and renal diseases. Antihypertensives are prescribed appropriately depending on the degree of hypertension. But, many hypertensives require two or more drugs of different combinations to control blood pressure. This may lead to adverse drug interactions and side effects. The chief side effects include pedal edema, fatigue, frequent urination, insomnia, impotence, postural and post-prandial hypotension, risk of dangerous consequences and shortened life span. Although there are many relaxation and meditation techniques available to common people, yet something is lacking to deal with hypertension properly. (Monane, 1996)

Yoga-nidra relaxation is a safe, effective and inexpensive technique can be used as a treatment for hypertension as it is encouraging for both the doctor and the community at large. Yoga-nidra is probably the best-known technique to induce complete physical mental and emotional relaxation. Yoga-nidra is a state of consciousness, which is, neither sleep nor awaken. It can be defined as an altered state of consciousness. There is a growing body of research on new non-drug modalities such as yoga and meditation in reducing blood pressure. Evidence supporting its use as alternative therapy is accumulating. Yoga and meditation are relaxation techniques which are noninvasive, easy to practice and cost-effective.

They do not have any appreciable side-effects or symptoms. Yoga-nidra adopted either alone or as an adjunct therapy, has been found to reduce systolic readings by an average of 15-20 mm Hg and diastolic readings by 10 mmHg. This will generally happen after daily guided practice of Yoga-nidra (Kumar, 2005).

Various studies have been done to know the effect of Yoga-nidra in the field of yogic research. P.Carrington has concluded in his work, which was published in Medical magazine 2000 that, Yoga-nidra has its widespread application as a preventive measure, to be practiced by healthy and active people as a means of relieving accumulated tensions, increasing stress resistance and overall psychosomatic disease.

As hypertension is a silent- killer which is asymptomatic in the early stage it makes the people to end up in other complications or diseases. In elderly the common problem is that they may not adhere to the drug regimen regularly. Although scientific studies support the use of yoga and meditation in treatment of hypertension, it has not been standardized and fully recognized or endorsed by medical professionals. Therefore it is imperative to conduct research on Yoga-nidra for controlling hypertension among elderly population.

1.2 Statement of the Problem

Effect of Yoga-nidra on Blood Pressure among Elderly with Hypertension Residing at Selected Old age Homes, Coimbatore.

1.3 Objectives of the Study

1.3.1. To assess the level of blood pressure among elderly with hypertension residing at selected old age homes.

1.3.2. To evaluate the effect of yoga-nidra on blood pressure among elderly with hypertension residing at selected old age homes.

1.3.3. To find an association between selected demographic variables and blood pressure.

1.4 Operational Definition

1.4.1 Effect

It refers to the change produced by yoga-nidra in blood pressure among elderly.

1.4.2 Yoga-nidra

It refers to the practice of shavasana for elderly where the elderly are asked to lie flat at the back and follow the instructions of the researcher.

1.4.3 Blood Pressure

It refers to the force exerted by the blood against the walls of the blood vessels. It is measured by using sphygmomanometer.

1.4.4 Hypertension

It refers to the sustained elevation of blood pressure. The level of blood pressure was categorized as mild hypertension, moderate hypertension and severe hypertension. In terms of systolic blood pressure, mild hypertension is 120-139mm of Hg, moderate is 140-159mm of Hg and severe is ≥160 mm of Hg. In terms of diastolic blood pressure, mild hypertension is 80-89mm of Hg, moderate is 90-99mm of Hg and severe is ≥100mm of Hg.

1.4.5 Elderly

It refers to the people both men and women diagnosed with hypertension and taking treatment who are above the age of 60 years residing at Universal Peace Foundation and Ozanam Home for Aged.

1.5 Hypothesis

H_1: There will be a significant difference in the level of blood pressure among elderly with hypertension residing at selected old age homes before and after yoga-nidra in experimental group.

H2: There will be a significant difference in the level of blood pressure among elderly with hypertension between experimental and control group.

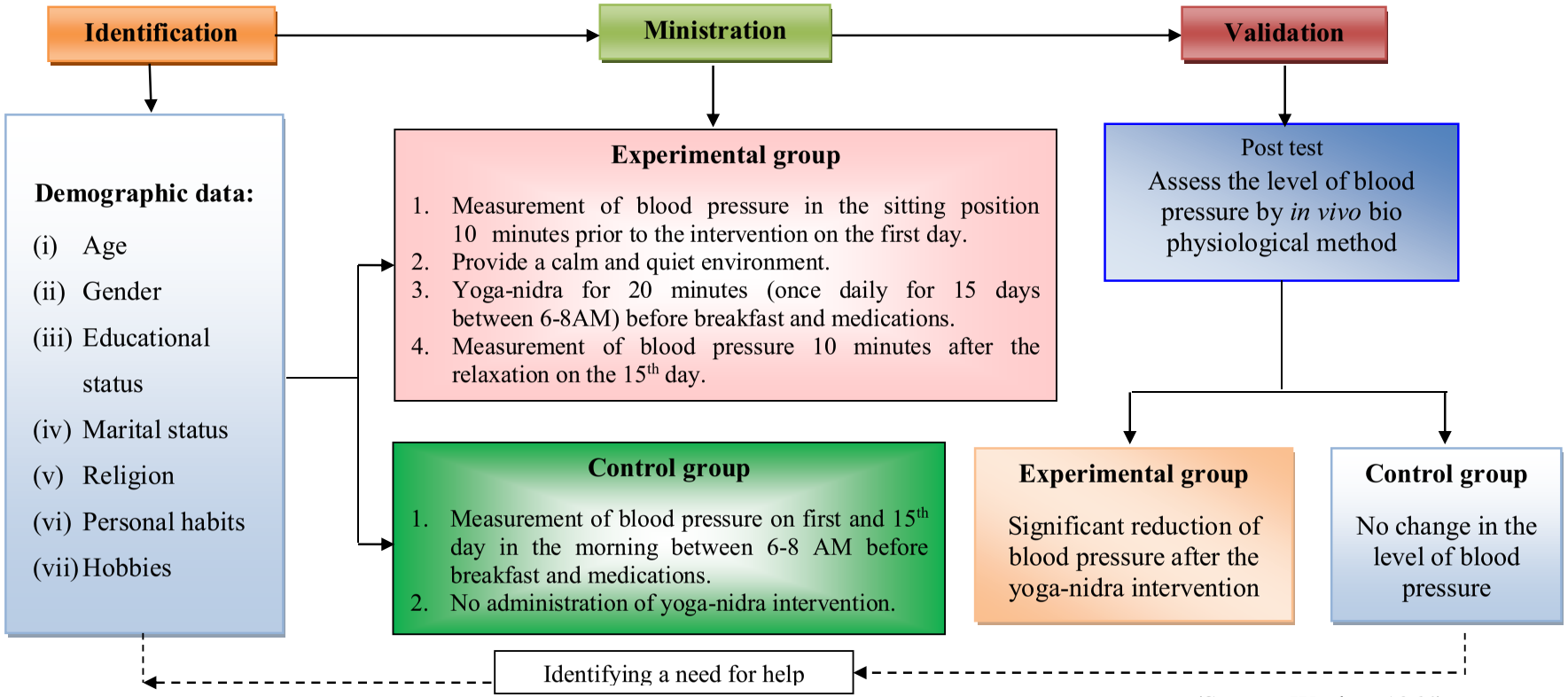
1.6 Conceptual Framework

Conceptualization is a process of forming ideas which utilizes and forms a conceptual framework for the study. It is the abstract, logical structure which enables the researcher to link the findings to the nursing body of knowledge. A framework is the abstract of logical structure of meaning that guides the development of the study and the body of knowledge.

Widen Bach's helping art clinical nursing theory (1964) will be chosen as a conceptual framework for this study. It consists of three components such as identification, ministration and validation.

Figure 1.1

Conceptual framework on Modified Widen Bach's helping art of clinical nursing theory (1964)



(Source: Wesley, 1964)

1.7 Projected Outcome of the Study

Implementation of yoga-nidra will reduce the level of blood pressure among elderly with hypertension.

REVIEW OF LITERATURE

Literature is an essential component of the investigator for a greater understanding of the research problem and its major aspects. It provides an opportunity to evaluate many different approaches to the problems. First it is necessary to obtain the most current facts relevant to the problem, and secondly a thorough literature review will assist the selection or development of the theoretical and methodological approaches to the problem.

The literature gathered by the researcher was discussed under the following sections.

2.1. Literature related to elderly with hypertension.

2.2. Literature related to yoga-nidra.

2.3. Literature related to effect of yoga-nidra on blood pressure among elderly with hypertension.

2.1 Literature Related to Elderly with Hypertension

Anchala et al (2014) had done a region-specific systematic review and meta-analysis of the prevalence, awareness and control of hypertension among Indian patients. Of the total 3047 articles, 142 were included. Overall prevalence for hypertension in India was 29.8%. Significant differences in hypertension prevalence were noted between rural and urban parts [27.6% and 33.8%; P=0.05]. Regional estimates for the prevalence of hypertension were as follows: 14.5%, 31.7%, 18.1%, and 21.1% for rural north, east, west, and south India and 28.8%, 34.5%, 35.8% and 31.8% for urban north, east, west, and south India respectively. Overall estimates for the prevalence of awareness, treatment and control of BP

were 25.3%, 25.1% and 10.7% for rural Indians; and 42.0%, 37.6% and 20.2% for urban Indians. About 33% urban and 25% rural Indians are hypertensive. Of these, 25% rural and 42% urban Indians are aware of their hypertensive status. Only 25% rural and 38% of urban Indians are being treated for hypertension. One-tenth of rural and one-fifth of urban Indian hypertensive population have their BP under control.

Marchiori et al (2014) conducted a study to evaluate the effects of Zen meditation on blood pressure (BP) and quality of life in elderly subjects. A total of 59 volunteers (21 men and 38 women), aged ≥60 years with systolic BP between 130 and 159mmHg and diastolic BP between 85 and 99mmHg were randomly divided into a meditation group (n=28) and a control group (n=31). The meditation group meditated twice a day for 20 minutes for 3 months, and the control group remained on a waiting list. The BP levels were measured monthly in both groups. The volunteers medication was kept stable. A quality of life assessment instrument was applied at the beginning and end of the study. For systolic BP, analysis of variance showed the influence of time ($F_{(4,228)}$ =4.74, P<0.01, β=0.98) and the interaction group×time ($F_{(4,228)}$ =3.07, P<0.01, β=0.89). The meditation group showed a significant decrease in systolic BP levels in the second measurement after 1 month of meditation practice when compared with the control group (Newman–Keuls test, P<0.05). Starting at the second measurement, systolic BP levels in the meditation group were lower than the baseline and first measurement levels; however, the systolic BP levels were similar to those observed in the control group. In the quality of life assessment evaluation, a significant improvement in psychological aspects and overall quality of life in the meditation group compared with the control group was observed.

Gupta et al (2014) conducted a community based cross- sectional study to assess the prevalence of hypertension and its association with socio demographic factors in geriatric population of rural Varanasi. Study sample consists of 215 persons and the subjects were from three selected villages. Pre- designed and pre- tested schedule was used to interview the subjects. Blood pressure recording was done at the end of interview and clinical examination so that patient becomes relaxed and the instrument was held at the level of heart. Mean systolic blood pressure was 132.97±19.28 and mean diastolic blood pressure was 82.44±9.94. Overall prevalence of hypertension was 35.8% and for males and females were 40% and 32.17% respectively. Prevalence of systemic hypertension was 43.4%, 30.7% and 5.6% in the age group 60-69 years, 70-79 years and 80 years, respectively.

Patil et al (2014) conducted a study on comparison of the effects of yoga and lifestyle modification on grade-I hypertension in elderly males. A randomized control study was conducted on age and body mass index matched elderly male subjects (n=42) between 60-80 years with grade-I hypertension. They were equally divided into yoga group (n=21) and life style modification group (n=21). The yoga group was assigned for practice of a yoga module and the life style modification group (n=21) was assigned for stretching exercises and brisk walk, for six days in a week, for 1 hour in the morning for 6 weeks. Their cardiovascular parameters including heart rate and blood pressure were recorded before and after the intervention period. There was a significant decrease in systolic blood pressure ($P<0.001$) in elderly with hypertension following yoga therapy for 6 weeks, whereas no statistically significant change was noticed in the life style modification group practicing stretching exercise and brisk walk for the same duration.

Srinivasan & Balamurugan (2013) conducted a cross-sectional study on prevalence of diabetes and hypertension among geriatric population in a Rural community of Tamil Nadu. The study was conducted on 400 geriatric population at Attayampatti village, Rural community in Salem district by using a pre-tested, semi-structured questionnaire. House to house visit was done on simple random basis. Their height and weight was measured and body mass index was calculated. The diabetic status was confirmed by using random blood sugar estimation and hypertension was assessed by using a standard sphygmomanometer. The overall prevalence of diabetes and hypertension among study population was 36% and 59% respectively. Among diabetes, the prevalence in males and females was 22% and 15% respectively. Among hypertensives, the prevalence in males and females was 33.3% and 26.2%. Their mean blood pressure was 140/100mm of Hg and the mean random blood sugar was 180mgs/dl. Factors like age, body mass index and smoking showed statistical significant association towards diabetes and hypertension.

Chinnakali et al (2012) conducted a study to estimate the prevalence of hypertension and understand the health seeking behavior among the elderly in rural Puducherry, south India. A total of 211 elderly from a rural community were selected by systematic random sampling. Blood pressure (BP) was measured. Socio-demographic characteristics and health seeking behavior were assessed by interviews. Prevalence of hypertension among study participants was 40.5%. Prevalence of hypertension among elderly male and female subjects was 39.2% and 40.8% respectively. 62% were already aware of their hypertensive status. 54.7% were diagnosed at government health facilities either at primary health

centers or a government hospital. Burden of hypertension among the elderly is high in rural areas. Strategies to detect and treat hypertension in the elderly have to be implemented early.

Virdis et al (2011) conducted an evidence based review on hypertension in the elderly. In this they stated that the progressive ageing of world population and the increasing prevalence of hypertension in elderly people are leading to the consideration for hypertension treatment. Multiple mechanisms, including stiffening of large arteries, endothelial dysfunction, cardiac remodeling, autonomic dysregulation, renal aspects, contribute to the great prevalence of hypertension in the elderly and to increased cardiovascular morbidity and mortality. Treatment of hypertension can hardly put back older patients in a low risk category, especially if target organ damage is present. Blood pressure should be lowered below 140/90 mmHg also in older patients. Drug treatment should be titrated with particular caution to adverse responses and excessive blood pressure lowering.

Joshi et al (2007) conducted a study on the elderly rural population of Delhi, showing the prevalence of hypertension as 11.25% and this showed a higher prevalence of hypertension in elderly persons in urban area compared to rural area and it also showed a mean age of detecting hypertension was to be 54.2 years. The prevalence of hypertension among males and females was 33.3% and 26.2%.

Rajeev et al (2007) conducted a study among elderly rural population of Jaipur, showed that the prevalence of hypertension among males were 50.8% and among females as 51%. It was found that 25.2% of study subjects had isolated systolic hypertension, and they found out age, smoking and body mass index as significant determinants of hypertension.

Kearney et al (2004) conducted a systematic review on worldwide prevalence of hypertension. The reported prevalence of hypertension varied around the world, with the lowest prevalence in rural India (3.4% in men and 6.8% in women) and the highest prevalence in Poland (68.9% in men and 72.5% in women). Significant numbers of individuals with hypertension are unaware of their condition and, among those with diagnosed hypertension, treatment is frequently inadequate. Measures are required at a population level to prevent the development of hypertension and to improve awareness, treatment and control of hypertension in the community.

Gupta et al conducted three serial epidemiological studies (Criteria:>=140/90 mm of Hg) carried out during 1994, 2001 and 2003 demonstrated rising prevalence of hypertension (30%, 36%, and 51% among males and 34%, 38% and 51% among females respectively).

Mohan et al (2001) conducted the initial study from urban Chennai and reported 8.4% prevalence of hypertension among men and women aged 20 years and above and belonging to the low socio economic group (based on household income, occupation and dietary pattern). Similarly, in the middle socio economic group had a higher prevalence (15%) during 1996-97.

Monane et al (1996) conducted a retrospective cohort study to measure compliance and related demographic factors in 4068 elderly outpatients newly starting antihypertensive therapy from 1982 through 1988. Logistic regression modeling of data from the New Jersey Medicaid program was used. These patients filled antihypertensive prescriptions covering an average of only 179 days in the 365-day follow-up period (49%) Good compliance (> or = 80%) was

associated with advanced age (odds ratio [OR] = 2.12, for patients 85 or older) and White race (OR = 0.55 for Blacks). There was no relationship between compliance and gender. Despite the efficacy of antihypertensive therapy in preventing cardiovascular morbidity, such high rates of noncompliance may contribute to suboptimal patient outcomes.

Nataraj et al (1995) conducted a study among the elderly in rural community in Tamil Nadu, found the prevalence of hypertension among males 7.71% and among females is 10.6%.

National Institute of Aging, U.S.A stated that "We are aging- not just as individuals or communities but also as a world". In the year 2004 it was accounted that old age population is 236/10000 in the world (WHO). In 2006, almost 500 million people worldwide were 65 and older. By 2030, that total is projected to increase one billion, accounting 13 percent of the total population. Between 2006 and 2030, the number of older people in less developed countries is projected to increase by 140 percent as compared to an increase of 51 percent in more developed countries.

2.2 Literature Related To Yoga-nidra

Bajpai et al (2015) conducted a study to assess the effect of Bhramari Pranayama and Yoga nidra on cardiovascular hyper-reactivity to cold pressor test. A total of young medical students were selected who performed Bhramari Pranayama and Yoga nidra for duration of 3 months. Cold pressor test was done on each student before and after yoga. There was 79% reduction in hyper-reactivity to cold pressor test as number of hyper-reactors reduced from 32 before the study to 7 after 3 months of yoga. Systolic rise of blood pressure to cold

pressor test reduced from 20.1 ± 3.5 mm Hg to 15.2 ± 3.7 mm Hg ($P < 0.001$) and diastolic rise reduced from 13.81±3.4mmHg to 10.37±2.62mmHg ($P < 0.001$) in hyper-reactors. Mean systolic blood pressure in all the 94 subjects reduced from 119.87±12.01 mm Hg to 117.68±11.89 mm Hg whereas mean diastolic blood pressure reduced from 77.08 ± 9.3 mm Hg to 75.11 ± 9.07 mm Hg ($P<0.001$). Bhramari Pranayama and Yoga nidra together can significantly alleviate stress induced changes in cardiovascular parameters.

Anand et al (2015) conducted a study on effectiveness of yoganidra on quality of sleep among cancer patients. This study assessed quality of sleep among cancer patients and the effectiveness of yoganidra intervention on quality of sleep in terms of improvement using Pittsburgh Sleep Quality Index. A survey was used in phase I (n=25) to assess the quality of sleep using PSQI. In phase II, an evaluative approach was used through one group pre-test post-test design (n=19). The participants with poor quality of sleep were given yoganidra intervention. Among the study participants, most of them (24%) suffered from breast cancer; 40% each were in stage I and stage II. Majority (75%) of the participants were receiving chemotherapy along with radiation therapy. Paired 't' test was used to determine the effectiveness of yoganidra intervention on quality of sleep, which showed that there is significant difference between pre-test and post-test mean scores on PSQI ($t=3.720$) ($p=0.002$).

Santaella et al (2014) conducted a randomized controlled trial on Yoga relaxation (Savasana) decreases cardiac sympathovagal balance in hypertensive patients. This randomized controlled trial was performed at the Hemodynamic Laboratory of the Physical Education School of the University of Sao Paulo in

Brazil. Sixteen hypertensive (6-women) and 14 normotensive patients (6-women) non-obese subjects participated in 2 random sessions: savasana relaxation and control. Patients remained supine for 55 minutes after interventions. Electrocardiogram, beat-to-beat blood pressure and respiration were acquired during and after interventions for posterior autoregressive spectral analysis of the R-R interval and blood pressure variability. Savasana relaxation decreases cardiac sympathetic autonomic modulation after its performance in hypertensive patients; this reduction lasts at least 35 minutes and is not blunted in hypertensive patients when compared to normotensive controls. Thus, savasana relaxation has positive effects on cardiac autonomic modulation of hypertensive patients, and may be included as a strategy for the non-drug treatment of hypertension.

Monika et al (2012) conducted a study to see the effect of yoga-nidra on physiological variables in patients of menstrual disturbances of reproductive age group. The subjects for the study were 150 females with menstrual irregularities, 28.08±7.43 years of mean age, referred from department of Obstetrics and Gynecology CSMMU, UP, Lucknow. Subjects were divided randomly in to two groups intervention and in control groups -seventy five (75) in each group. The yogic intervention consisted of 35-40 minutes/day, five days in a week till six months. An autonomic function testing was done in both the groups at zero time and after six months. A significant positive effect was observed when yoga therapy was used as an adjunct in the patients of menstrual disturbances. There were significant improvements in the blood pressure, postural hypotension and sustained hand grip, heart rate expiration, inspiration ratio and 30:15 beat ratios of the subjects after yogic practice.

Rani et al (2012) conducted a study on yoga-nidra as a complementary treatment of anxiety and depressive symptoms in patients with menstrual disorder. Subjects were recruited from the Department of Obstetrics and Gynecology, C.S.M. Medical University (erstwhile KGMU), Lucknow Uttar Pradesh, India. The subjects were randomly divided in to two groups: Intervention group (with yogic intervention) and control group (without yogic intervention). Assessments of all subjects were carried out by administering Hamilton anxiety scale (HAM-A) and Hamilton rating scale for depression (HAM-D) at baseline and after six months. The mean age with S.D of the intervention group was 27.67 ± 7.85 years, and for control group was 26.58 ± 6.87 years (among completed intervention group n= 65 and control group n= 61). There was significant reduction of scores in HAM-A ($P<0.003$) and HAM-D ($P<0.02$) respectively in subjects with mild to moderate anxiety and depressive symptoms after six months of yoga therapy (Yoga-nidra) in intervention group in comparison to control group. The patients with mild to moderate anxiety and depressive symptoms improve significantly with 'Yoga-nidra' intervention. There is no significant improvement in the patients with severe anxiety and depressive symptoms.

Kumar K & Pandya P (2009) conducted a study on the impact on ESR level through Yogic relaxation technique Yoga-nidra. The study conducted at the Yoga Arogya polyclinic of Dev Sanskriti Vishwavidhyalaya. Practice time of Yoga nidra was 30 minutes and the duration was 6 months. Eighty students were taken from PG yoga classes for observing the effect as well as 30 was in control

group. The study shows a significant change on the ESR level of the normal persons as the result of Yoga nidra practice. The results are significant at 0.01 level of confidence. At the end was concluded that Yoga nidra positively decreases the level of ESR in the male and female subjects.

Kumar K (2006) conducted a study on the improvement of physical and mental health through Yoga nidra. The study aimed to find out the effect of Yoga nidra on Alpha E.E.G. and G.S.R. of college going students. The study was conducted at the yoga clinic of Dev Sanskriti Vishwavidyalaya. Practice time was 30 minutes and the duration was 6 months. The sample consisted of 80 students which includes forty males and forty females. A control group of 30 students (fifteen males and fifteen female) was taken up in the study. The result shows a significant change as Yoga nidra positively increase the Alpha E.E.G. and G.S.R. of the subjects. This indicates the improvement of physical and mental health as a result of practicing Yoga nidra.

Sivasankaran et al (2006) hypothesized that yoga and meditation will improve parameters of endothelial function. They examined the effects of yoga and meditation on hemodynamic and laboratory parameters as well as on endothelial function in a 6-week pilot study. Systolic and diastolic blood pressures, heart rate, body mass index, fasting glucose, lipids, has C-reactive protein, and endothelial function (as assessed by brachial artery reactivity) were all studied at baseline and after 6 weeks of yoga practice. A course in yoga and meditation was given to the subjects for 1.5 hours three times weekly for 6 weeks and subjects were instructed to continue their efforts at home. This prospective

cohort study included 33 subjects (mean age 55 ± 11 years) both with (30%) and without (70%) established coronary artery disease (CAD). There were significant reductions in blood pressure, heart rate, and body mass index in the total cohort with yoga. None of the laboratory parameters changed significantly with yoga. For the total cohort there was no significant improvement in endothelial-dependent vasodilatation with yoga training and meditation compared with baseline (16.7% relative improvement from 7.2–8.4%; p=0.3). In the group with CAD, endothelial-dependent vasodilatation improved 69% with yoga training (6.38-10.78%; p = 0.09). Yoga and meditation appear to improve endothelial function in subjects with CAD.

Kumar K (2004) conducted a study on yoga nidra and its impact of student's well being. The study aimed to find out the effect of Yoga nidra on stress, anxiety and general well being on college going students. The study was conducted at the yoga clinic of Dev Sanskriti Vishwavidyalaya. Practice time was 30 minutes the duration was 6 months. 40 students were taken from P.G. yoga classes for observing the effect as well as 12 was in control group. The result shows a significant change as yoga nidra positively decrease the stress level of the subjects whereas no significant change seen in anxiety level. As well as yoga nidra positively increase the general wellbeing of the subjects.

2.3 Literature related to effect of Yoga-nidra on blood pressure among Elderly with Hypertension.

Devi & Kala (2015) conducted a study on role of Yoga-nidra and shirodhara on hypertensive patients. The study was conducted on 32 hypertensive patients aged 30-60 years, were randomly selected from Polyclinic, Dev Sanskriti Vishwavidyalaya, Gayatrikunj, Hardwar through the method of accidental sampling. In this study pre- post single group design" was used and t-test has been used for statistical analysis. There were significant reduction in mean values of systolic blood pressure and diastolic blood pressure From the present study it was observed that a significant reduction in the systolic blood pressure, diastolic blood pressure occurs in subjects practicing yoga-nidra and shirodhara ($p<0.001$). The finding reveals that significantly reduced the level of systolic and diastolic blood pressure of the hypertensives.

Deepa et al (2012) conducted a study to assess the effect of yoga and meditation on mild to moderate essential hypertensives. The patients were divided into two groups: (a) 15 patients treated with antihypertensive drugs along with yoganidra, (b) 15 patients on antihypertensive drugs alone. Yoganidra practiced for 45 min daily in the morning and evening. Parameters were recorded at the beginning and again at the end of 3 months. The study showed a significant fall of mean blood pressure after 3 months of yoganidra ($P<0.01$ significant). Results of this study suggested that yoganidra can be used as adjunctive treatment with drug therapy on mild and moderate essential hypertensives.

Kumar K (2005) conducted a study to find out the effect of yoga nidra on hypertension and other psychological co-relates. The study conducted at Patliputra SevaSansthan Patna City, Patna. Practice time was 30 minutes and the duration was fifteen days. Forty people suffering with mild hypertension (30 males and 10 females) were taken for the study. Where the males were businessman and females were house wives. The means of pre and post values of systolic blood pressure was 155 and 125mm of Hg and the 't' value was 10.13 whereas for diastolic pressure was 98 and 76mm of Hg and the 't' value was 8.09. The result shows a significant change as yoga nidra positively decrease the blood pressure (both systolic and diastolic) as well as pulse rate, respiration rate, stress, anger and fear. Whereas no significant change shown at the depression level.

METHODOLOGY

This chapter deals with the description of research approach, research design, setting, population, sampling technique, criteria for sample selection, variables of the study, tools for data collection, report of the pilot study, changes brought after pilot study, procedure for data collection and techniques of data analysis and interpretation.

3.1 Research Approach

The present study aimed to determine the effect of yoga-nidra on blood pressure among elderly with hypertension residing at old age homes, where the researcher manipulates the independent variable and measures the change in the dependent variable. Hence, in view of the nature of problem and to accomplish the objectives, quantitative evaluative research approach was adopted for the study.

3.2 Research Design

The research design used for the present study was quasi experimental pretest-posttest control group design. In this design, the experimental and control group were selected without randomization. Samples were taken from two settings. One setting samples were assigned to the experimental group and the other to the control group. The yoga-nidra was given only to the experimental group and the control group was kept under the routine treatment. Hence the design was found to be appropriate to evaluate the effect of yoga-nidra on blood pressure among elderly with hypertension residing at selected old age homes, Coimbatore.

3.3 Setting

The study was conducted at two selected old age homes namely Universal Peace Foundation and Ozanam Home for Aged. Universal Peace Foundation is located at Karumathampatti. Drug therapies and recreational activities are rendered as routine activities for the elderly residing at this home. Ozanam Home for Aged is located at Saravanampatti. Drug therapies alone are rendered as routine activities in this home.

3.4 Population

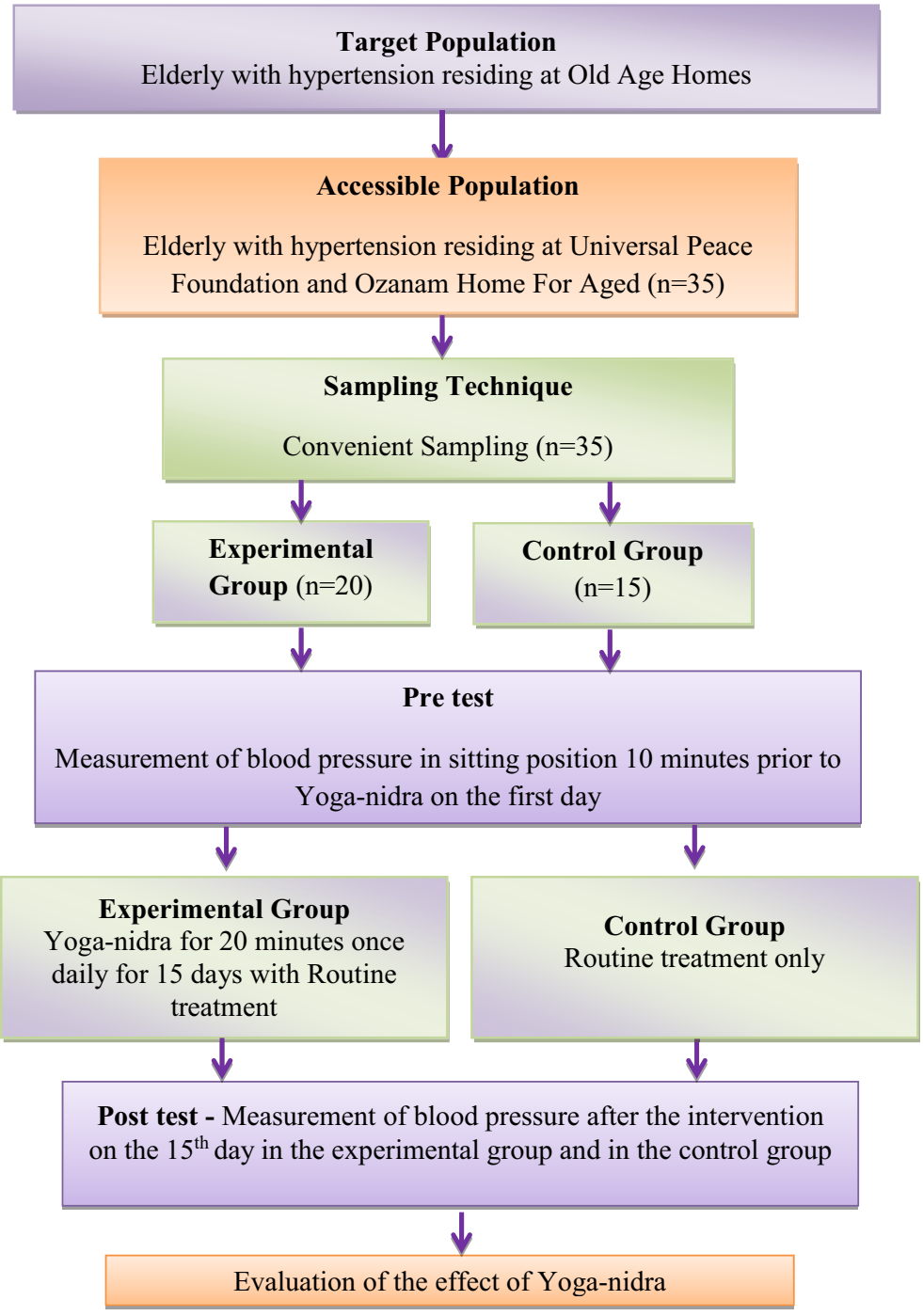
The target population for the present study was elderly with hypertension residing at old age homes. And the accessible population was elderly with hypertension residing at Universal Peace Foundation and Ozanam Home for Aged, Coimbatore District. Elderly who are above the age of 60 years were selected for the study. Most of them are having diabetes mellitus, hypertension and arthritis and taking treatment from government hospital, Annoor. Expenses like food and clothes are managed by the trustees of the old age Homes. The normal routine activities carried out by the elderly are cooking, gardening and hand craft works.

3.5 Sampling

Convenient sampling technique was used to select the participants for this study. In Universal Peace Foundation, the number of elderly with hypertension were 29 among them 20 elderly were selected based on the criteria and assigned for experimental group. In Ozanam Home for Aged, the number of elderly with hypertension were 16 among them 15 were selected based on the criteria and assigned to the control group.

Figure 3.1

Diagrammatic Representation of Research Process



3.6 Criteria for sample selection

3.6.1 Inclusion Criteria

1. Elderly who are able to lie flat.
2. Elderly who can follow the instructions.

3.6.2 Exclusion criteria

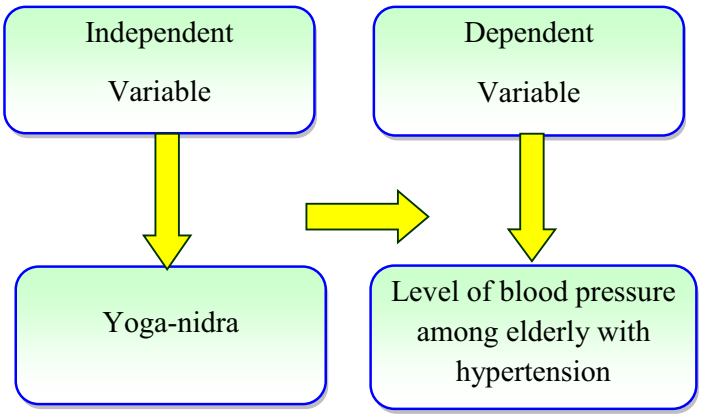
1. Elderly who are critically ill.
2. Elderly with hearing impairment.

3.7 Variables of the Study

In this study, the independent variable was yoga-nidra and the dependent variable was level of blood pressure among elderly with hypertension.

Figure 3.2

Diagrammatic Representation of Variables



3.8 Tools of data collection

The following tools were used for data collection

3.8.1 Questionnaire on demographic data and health history

3.8.2 Sphygmomanometer and stethoscope

3.8.1 Questionnaire on demographic data and health history

Demographic data consists of age, gender, educational status, marital status, religion, personal habits and family history of hypertension.

Health history consists of duration of hypertension, hobbies, duration of intake of antihypertensive and duration of stay at old age home.

3.8.2 Sphygmomanometer and Stethoscope

The blood pressure was measured indirectly by auscultation using stethoscope and mercury sphygmomanometer. The mercury sphygmomanometer includes a standard sized cuff and mercury column pressure gauge. The study participants were allowed to sit on a bed for few minutes and the blood pressure was recorded and documented.

3.9 Validity and Reliability of the tool

It refers whether an instrument accurately measures what it is supposed to be measured. As blood pressure is the frequently changing biographic variable and the people who are on antihypertensive will have a sudden change in blood pressure due to the medicinal effect. So the researcher had selected normotensive group of people comprising of 8 members for testing the reliability of the tool. The blood pressure level was monitored with the time gap of 1 hour. The values were recorded. The Karl- Pearson's correlation coefficient formula was used to test the homogeneity of the test-retest values. The reliability value of the systolic blood pressure is 0.755 and that of diastolic blood pressure is 0.725. The sphygmomanometer working condition was checked in the biomedical

engineering department. The prepared tool was validated by seven subject experts which included five nursing faculty and one medical expert. The experts were requested to give their opinion and suggestions regarding relevance, appropriateness, accuracy and degree of agreement in each item of the tool. Suggestions and recommendations given by the experts were accepted and necessary corrections were made. The content validity of each item of the tool was computed using Lynn's item wise content validity index (I-CVI) and the values were found to be greater than 0.83. The tool was found to have a high validity based on I-CVI interpretation for six or more experts.

3.10 Yoga-nidra

Procedure Schedule

i. Explanation regarding the intervention and obtaining informed oral consent.

ii. Arrangement of conducive environment for the intervention.

iii. Measurement of blood pressure in the sitting position for the elderly in the experimental group 10 minutes prior to the intervention on the first day.

iv. Make the elderly to lie flat and position them in comfortable manner. Yoga-nidra intervention will be given early in the morning between 6-8AM once daily for 15 days before the intake of food and medications.

v. Yoga-nidra starts with the initial stage of relaxation, affirmation, rotation of consciousness, respiration awareness, manifestations of opposites, creative visualization, then affirmation will be repeated and a return to full awareness.

vi. The intervention will be given for 20 minutes.

vii. The blood pressure is measured in the sitting position 10 minutes after the yoga- nidra intervention on the 15th day.

vii. The elderly are made to be seated in a comfortable manner and the measurements are recorded.

Stages of Yoga-nidra

Stage 1: Internalization/ Relaxation

Preliminary preparation of the body- lying in Shavasana, eyes are lightly closed, arms are kept with palms facing upward and the mind is concentrated on normal breathing. Slowly all the thoughts are given up.

Stage 2: Affirmation

A personal goal previously decided upon is declared silently – the practitioner should make a positive resolve about a particular aim in life. Eg.Everyday and in everyway I am getting better and better.

Stage 3: Rotation of Consciousness

The consciousness is taken on a tour of the whole body in a structured fashion – all the major and minor parts of the body are visualized i.e. mentally viewed, their shapes are recalled and let loose one after the other continuously in the following sequence: From Right side parts of the body to the left.

Stage 4: Respiration Awareness

A period of awareness of the breath at special positions in the body – ask the practitioner to simply maintain the awareness of breath, either at the nostril or of its passage through navel and throat.

Stage 5: Manifestations of Opposites

Pairs of feelings and emotions are experienced – attempt is made to bring to memory the intense physical and emotional feelings. Practiced with pairs of two opposite feelings like heat and cold, lightness and heaviness.

Stage 6: Creative Visualization

Various archetypal images are imagined/ visualized mentally – the practitioner tries to visualize the objects as described by the instructor. Eg.Mountain, river, breeze.

Stage 7: Affirmation

Is repeated again and now in a highly suggestible state of consciousness and is programmed in the subconscious mind.

Stage 8: Externalization/ Return to full awareness

A careful and gradual return to a normal state.

3.11 Ethical Committee Clearance

The proposed study and tool were presented to the Institution Ethical Committee and the same was approved by the Committee.

3.12 Pilot study

The pilot study was conducted over a period of one week. One group pretest posttest design was adopted to assess the effect of yoga-nidra on blood pressure among elderly with hypertension. The study was conducted in St. Thomas Home for the Aged at Ramanathapuram, for a period of seven days. Totally 12 elderly with hypertension were residing at the old age home. Among them 9 elderly with hypertension were selected as samples using convenient sampling technique based on the inclusion and exclusion criteria. The researcher developed rapport with elderly at the old age home and explained the benefits of the intervention. Blood pressure was measured in the sitting position 10 minutes prior to the intervention. Yoga-nidra was

administered in the morning between 6-8 am with the duration of 20 minutes once daily for 7 days. Then the blood pressure was measured in the sitting position 10 minutes after the intervention of each day and documented.

The mean score of the level of systolic blood pressure before and after Yoga-nidra was 134.64 and 122.89 with the standard deviation of 6.41 and 5.81 respectively. Calculated 't' value was 9.56, which was greater than the table value (t=5.04, df=8) at 0.001 level of significance. Hence it shows that there is a significant difference in the level of systolic blood pressure among elderly with hypertension at selected old age home. The mean score of the level of diastolic blood pressure before and after Yoga-nidra was 90 and 82.35 with the standard deviation of 3.22 and 3.79 respectively. The calculated 't' value was 12.45, which was greater than the table value (t=5.04, df=8) at 0.001 level of significance. Thus the result shows that there is a significant difference in the level of diastolic blood pressure among elderly with hypertension. Hence Yoga- nidra was effective in reducing blood pressure among elderly with hypertension.

3.12.1 Changes After The pilot study

During pilot study one group pretest posttest design was adopted to find out the effect of yoga-nidra. In addition to yoga-nidra, samples were receiving drug therapies and recreational activities. These extraneous variables were found to have influence on the study results. In order to control these extraneous variables and to find out the effect of yoga-nidra, the researcher decided to have control group in the main study.

3.13 Procedure for Data Collection

The main study was initiated after the pilot study. The validated tool was used for data collection and the main study was conducted over a period of one month from 27.06.2015 to 26.07.2015. The study was conducted at Universal Peace Foundation, Karumathampatti and Ozanam Home for Aged, Saravanampatti. A convenient sampling technique was used to select the study participants for this study. In Universal Peace Foundation, the number of elderly with hypertension were 29 and among them 20 elderly were selected based on the criteria and assigned for experimental group. And in Ozanam home for Aged, the number of elderly with hypertension were 16 and among them 15 elderly were selected based on the criteria and assigned to the control group. The researcher developed rapport with the elderly at the old age home and explained the benefits of the intervention. The intervention was given once daily in the morning with the duration of 20 minutes between 6-8 AM for 15 days. The blood pressure measurement was taken 10 minutes prior to the intervention in the sitting position for the elderly in the experimental group. The intervention was given in groups whereby the group consisted of 5-6 members. The blood pressure measurement was taken 10 minutes after the intervention in the sitting position on the 15th day and measurements were recorded. The control group received only the routine activities whereby the blood pressure was measured in the morning between 6-8AM on the first and 15th day in the sitting position and documented.

3.14 Techniques of Data Analysis and Interpretation

Descriptive and Inferential statistical method was used for data analysis. Descriptive statistics was applied for the analysis of demographic variables. Inferential statistical method was used to identify the effect of yoga-nidra.

3.14.1 Student 't' test

Student 't' test was used to analyse the effect of yoga-nidra on blood pressure (systolic and diastolic blood pressure) among elderly with hypertension between experimental and control group.

$$t = \frac{\overline{X_1} - \overline{X_2}}{SE}$$

Where,

$$SE = SD \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$$

$$SD = \sqrt{\frac{\sum\left(x_1 - \overline{x_1}\right)^2 + \sum\left(x_2 - \overline{x_2}\right)^2}{n_1 + n_2 - 2}}$$

$\overline{X}_1$ = Mean blood pressure (systolic & diastolic blood pressure) level of the experimental group

$\overline{X}_2$ = Mean blood pressure (systolic & diastolic blood pressure) level of the control group

SE = Standard error

SD = Combined standard deviation

n_1 = Number of samples in experimental group

n_2 = Number of samples in control group

3.14.2 Paired 't' test

Paired 't' test was used to analyse the difference between pre and post test level of blood pressure (systolic & diastolic blood pressure) within both groups.

$$t = \frac{\bar{d}}{SE}$$

where,

$$SE = \frac{SD}{\sqrt{n}}$$

$$SD = \sqrt{\frac{\sum D^2 - \frac{\left(\sum D\right)^2}{n}}{n-1}}$$

$\bar{d}$ = Mean of difference between test score

SE = Standard Error

SD = Standard deviation of the test score

n = Number of samples

3.14.3 Chi-Square test (with Yates correction)

Chi-Square (with Yates correction) test was used to check the association between the level of blood pressure (systolic & diastolic blood pressure) before the intervention with selected demographic variables.

$$\chi^2 = \sum \frac{\left((O-E)-0.5\right)^2}{E}$$

O = Observed value

E = Expected value in corresponding category

0.5 = Yates correction value

DATA ANALYSIS AND INTERPRETATION

This Chapter deals with the analysis and interpretation of data collected from 35 elderly people with hypertension residing at selected old age homes. Aim of the study is to determine the effect of yoga-nidra on blood pressure among elderly with hypertension residing at selected old age homes, Coimbatore. In Universal Peace Foundation, the number of elderly with hypertension was 29 and among them 20 elderly were selected based on the criteria and assigned for experimental group who received yoga-nidra intervention. In Ozanam Home for Aged, the number of elderly with hypertension were 16 among them 15 elderly were selected based on the criteria and assigned to the control group who received routine treatment. Blood pressure measurements were taken by using sphygmomanometer in the sitting position 10 minutes prior to the intervention on the first day. Yoga-nidra was given for 20 minutes in the morning between 6-8 AM once daily for 15 days. Then the blood pressure was measured in the sitting position 10 minutes after the intervention on the 15^{th} day and was documented. Descriptive and Inferential statistical methods were employed to organize and analyze the data. Descriptive statistics was used to analyse the demographic variables. Student 't' test was used to analyse the effect of yoga-nidra on blood pressure among elderly with hypertension between experimental and control group. Paired 't' test was used to analyse the difference between pretest and posttest level of blood pressure in both groups. Chi-Square (with Yates correction) test was used to find the association between the level of blood pressure before yoga-nidra with selected demographic variables.

ORGANIZATION OF FINDINGS

Section I

Demographic variables and health history of elderly with hypertension residing at selected old age homes in experimental and control group.

Section II

Assessment on level of blood pressure among elderly with hypertension residing at selected old age homes in experimental and control group.

Section III

Effect of yoga-nidra on blood pressure among elderly with hypertension residing at selected old age homes in experimental and control group.

Section IV

Association between the level of blood pressure before intervention with selected variables among elderly with hypertension residing at selected old age homes.

Section I

4.1 Demographic Variables and Health History among Elderly with Hypertension Residing at Selected Old Age Homes

This section presents the demographic variables and health history collected from elderly with hypertension residing at selected old age homes. The variables collected were age, gender, educational status, marital status, religion, personal habits, family history of hypertension, hobbies, duration of hypertension, duration of intake of antihypertensives, duration of stay at old age home and co-morbid illnesses.

Collected data were analyzed using descriptive statistics and were summarized in terms of frequency and percentage.

Table 4.1.1

Age of Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S. No	Age in years	Experimental group(n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	61-70	10	50	8	53.34
2.	71-80	8	40	5	33.33
3.	>81	2	10	2	13.33

The above table 4.1.1 depicts that in the experimental group 50% of the participants were between 61-70 years of age, 40% in 71-80 years of age, 10% in 81 years and above and that of in the control group 53.34% were between 61-70 years of age, 33.33% in 71-80 years of age and 13.33% were 81 and above years. (Fig 4.1.1)

Table 4.1.2

Gender of Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S. No	Gender	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Male	6	30	2	13.33
2.	Female	14	70	13	86.67

The above table 4.1.2 depicts that in the experimental group 30% were males, 70% were females and that of in the control group 13.33% were males and 86.67% were females. (Fig 4.1.2)

Figure 4.1.1

Age of Elderly with Hypertension Residing at Selected Old Age Homes

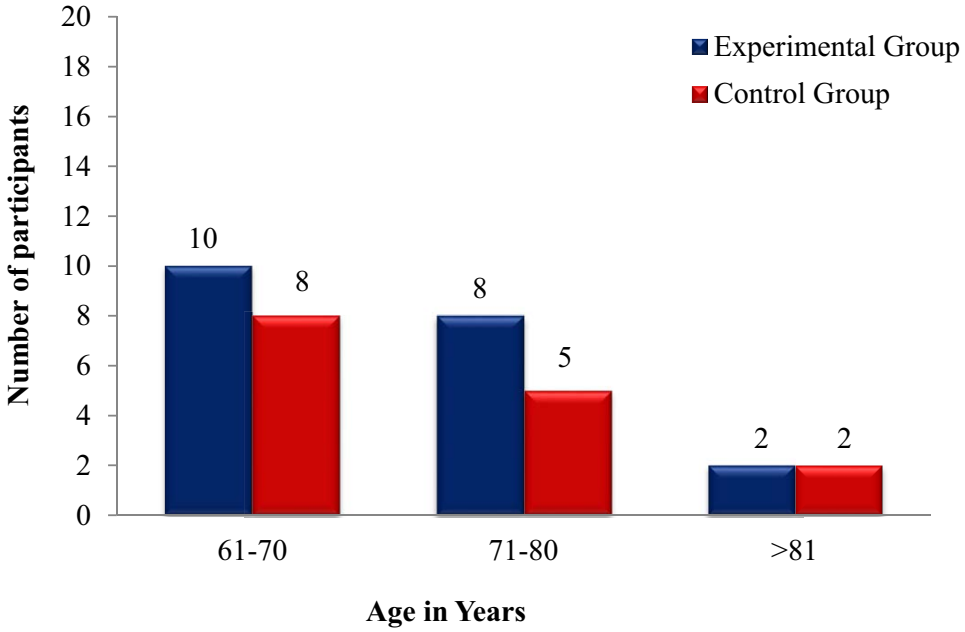


Figure 4.1.2

Gender of Elderly with Hypertension Residing at Selected Old Age Homes

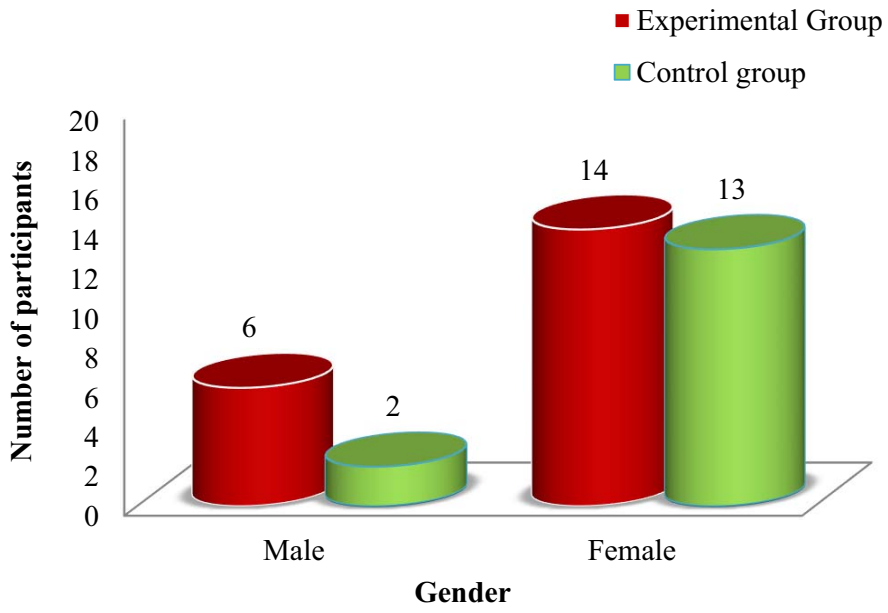


Table 4.1.3

Educational status of Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S.No	Educational status	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Illiterate	10	50	9	60
2.	Primary	9	45	4	26.67
3.	High School	1	5	2	13.33

The above table 4.1.3 depicts that in the experimental group 50% were illiterates, 45% had primary level education and 5% completed high school education. In the control group 60% were illiterates, 26.67% had primary level education and 13.33% had completed high school. (Fig 4.1.3)

Table 4.1.4

Marital status of Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S.No	Marital status	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Married	20	100	15	100
2.	Unmarried	-	-	-	-

The above table 4.1.4 depicts that in the experimental and control group all (100%) are married. (Fig 4.1.4)

Table 4.1.5

Stay with Spouse among Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S.No	Stay with Spouse	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Accompanied with spouse	-	-	1	6.67
2.	Staying Alone	20	100	14	93.33

The above table 4.1.5 depicts that in the experimental group all 20 (100%) were staying alone as they are widows and widowers. In the control group 1 (6.67%) is staying with spouse and remaining 14 (93.33%) are staying alone as they are widows and widowers. (Fig 4.1.5)

Figure 4.1.3

Educational status of Elderly with Hypertension Residing at Selected Old Age Homes

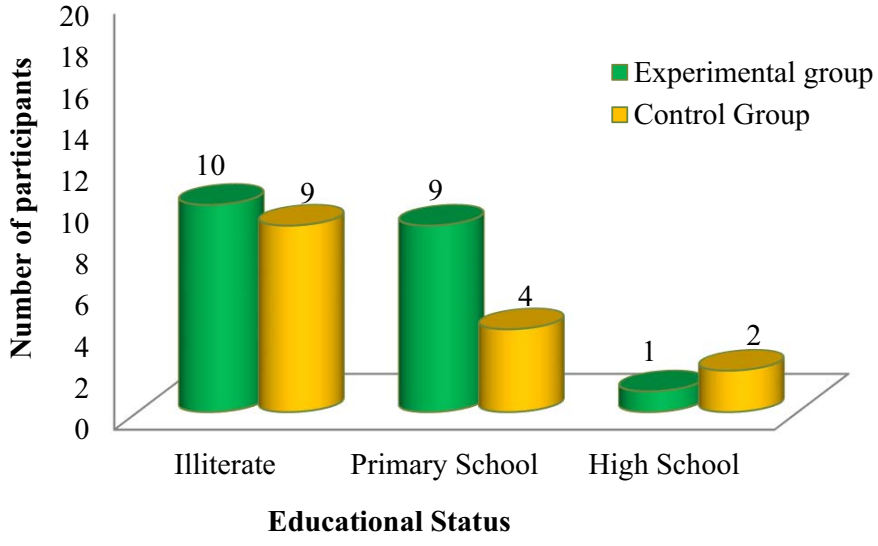


Figure 4.1.4

Marital status of Elderly with Hypertension Residing at Selected Old Age Homes

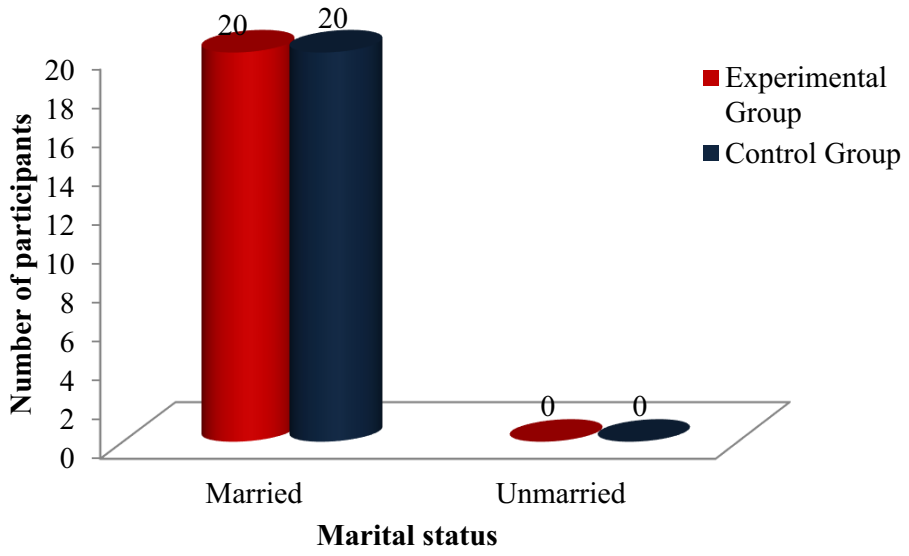


Figure 4.1.5

Stay with Spouse among Elderly with Hypertension Residing at Selected Old Age Homes

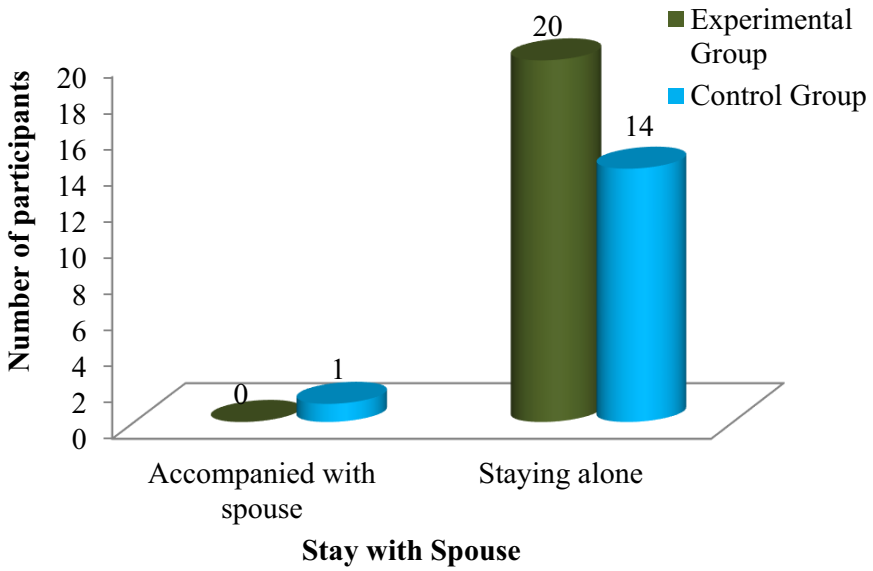


Table 4.1.6

Religion of Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S.No	Religion	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Hindu	20	100	3	20
2.	Christian	-	-	12	80

The above table 4.1.6 depicts that in the experimental group 100% belongs to Hindu religion and that of in the control group 20% belongs to Hindu religion and 80% are Christians. (Fig 4.1.6)

Table 4.1.7

Personal habits of Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S.No	Personal habits	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Smoking	3	15	2	13.33
2.	Betel chewing	1	5	2	13.33
3.	No habits	16	80	11	73.34

The above table 4.1.7 depicts that in the experimental group 80% is not having any personal habits, 15% is having smoking habit and 5% is having betel chewing habit. In the control group 73.34% is not having any personal habits, 13.33% elderly smoke and chew betel. (Fig 4.1.7)

Figure 4.1.6

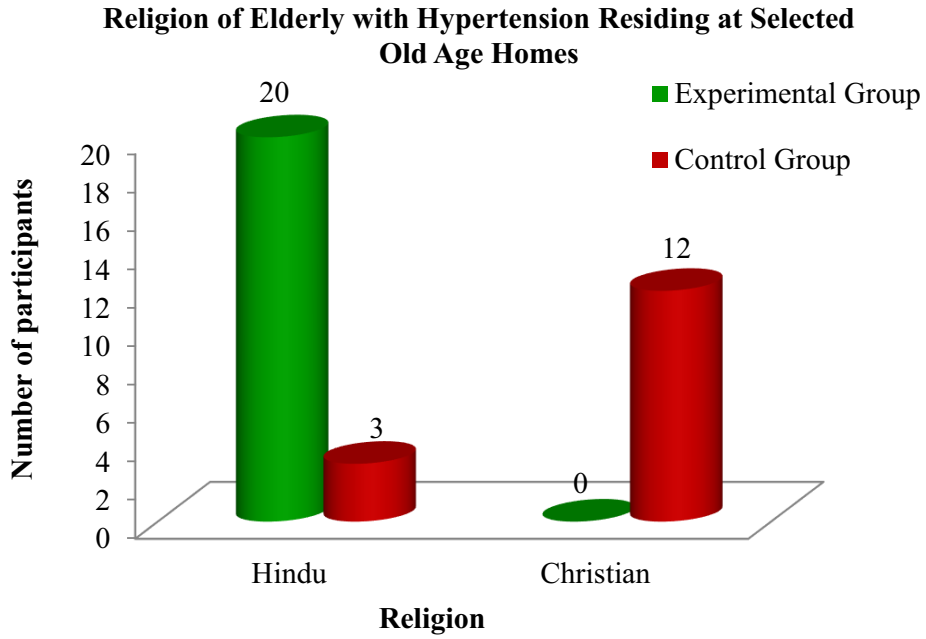


Figure 4.1.7

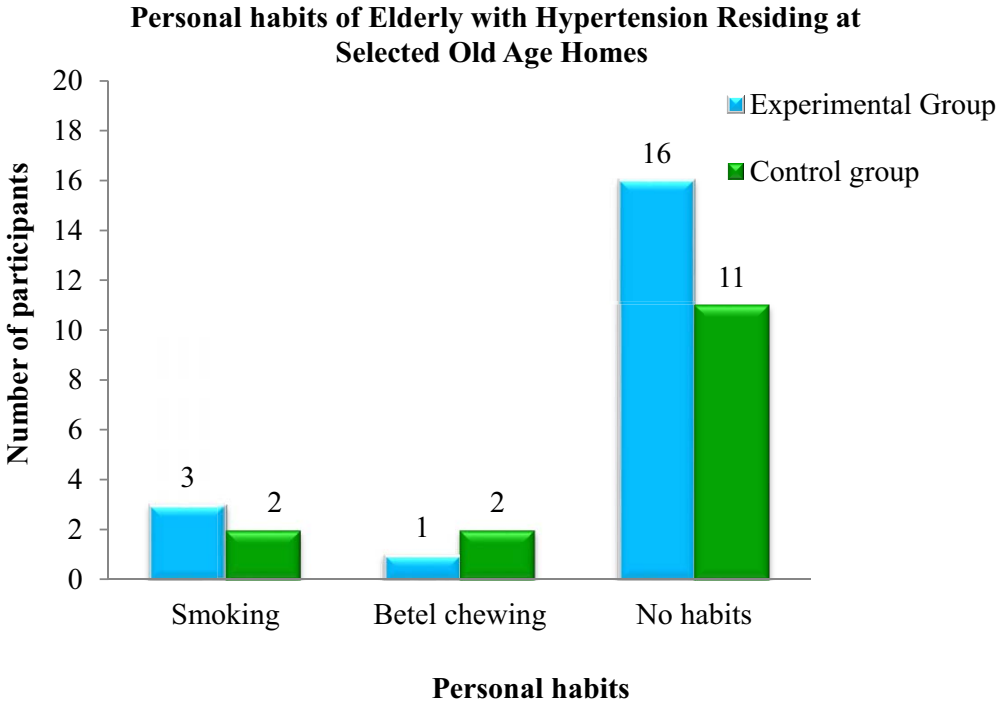


Table 4.1.8

Family history of Hypertension among Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S.No	Family history of Hypertension	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Yes	1	5	-	-
2.	No	19	95	15	100

The above table 4.1.8 depicts that in the experimental group 95% do not have family history and 5% have the family history of hypertension. In the control group 100% do not have family history of hypertension. (Fig 4.1.8)

Table 4.1.9

Hobbies of Elderly with Hypertension Residing at Selected Old Age Homes

(n=35)

S.No	Hobbies	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Yes	18	90	15	100
2.	No	2	10	-	-

The above table 4.1.9 depicts that, in the experimental group 90% elderly have hobbies such as cooking, gardening, listening to music and 10% do not have any hobbies. In the control group 100% elderly have hobbies such as gardening, listening to music, watching TV and hand craft works. (Fig 4.1.9)

Figure 4.1.8

Family history of Hypertension among Elderly with Hypertension Residing at Selected Old Age Homes

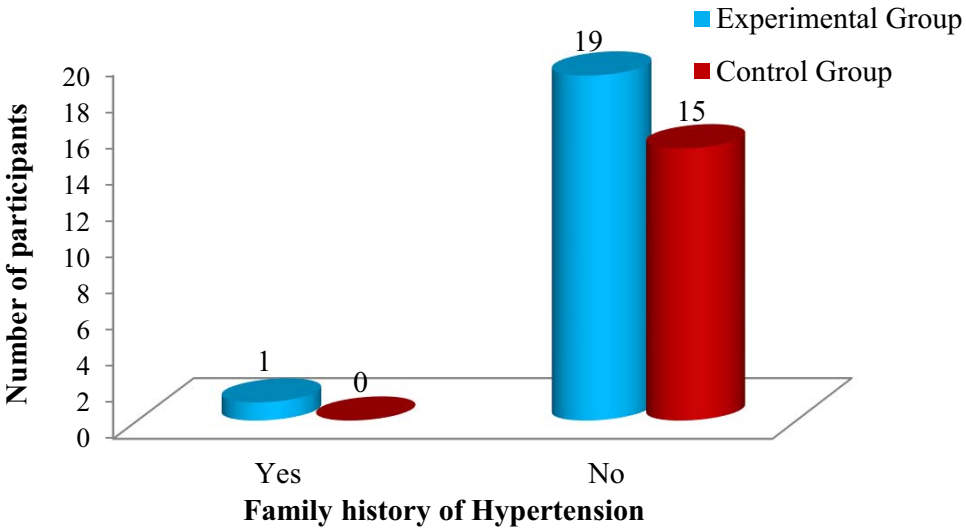


Figure 4.1.9

Hobbies of Elderly with Hypertension Residing at Selected Old Age Homes

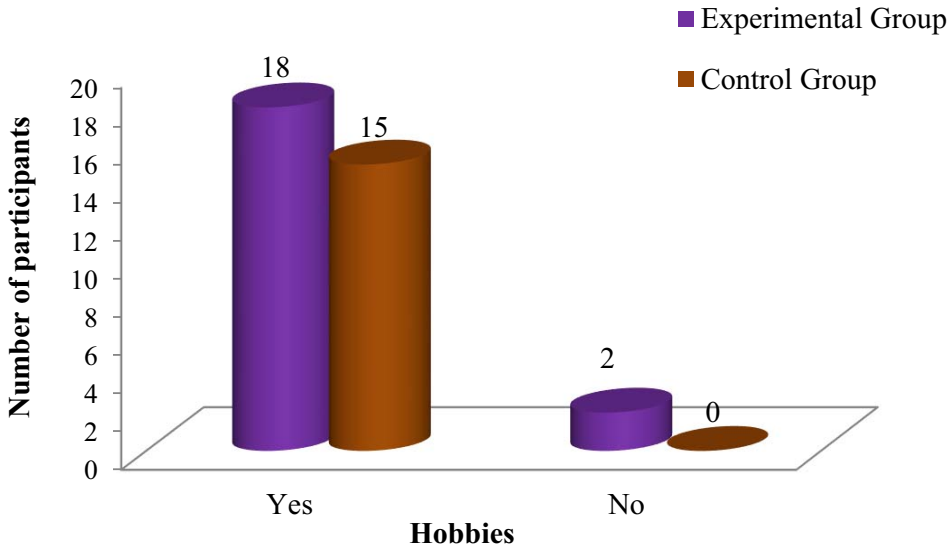


Table 4.1.10

Elderly with Hypertension Residing at Selected Old Age Homes based on Duration of Hypertension

(n=35)

S.No	Duration of Hypertension	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	1-5 years	13	65	11	73.33
2.	6-10 years	7	35	1	6.67
3.	11-15 years	-	-	1	6.67
4.	16-20 years	-	-	2	13.33

The above table 4.1.10 depicts the duration of hypertension and the result shows that in the experimental group 65% have hypertension for 1-5 years and 35% have it for 6-10 years. In the control group 73.33% have it for 1-5 years, 6.67% for 6-10 years, 6.67% for 11-15 years and 13.33% for 16-20 years. (Fig 4.1.10)

Table 4.1.11

Elderly with Hypertension Residing at Selected Old Age Homes based on Duration of Intake of Antihypertensives

(n=35)

S. No	Duration of Intake of Antihypertensives	Experimental group(n=20)		Control group(n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	1-5 years	14	70	11	73.33
2.	6-10 years	6	30	3	20
3.	11-15 Years	-	-	1	6.67

The above table 4.1.11 depicts about the duration of intake of antihypertensives. The result shows that in the experimental group 70% intake antihypertensives for 1-5 years and 30% for 6-10 years. In the control group 73.33% intake antihypertensives for 1-5 years, 20% for 6-10 years and 6.67% for 11-15 years. (Fig.4.1.11)

Figure 4.1.10

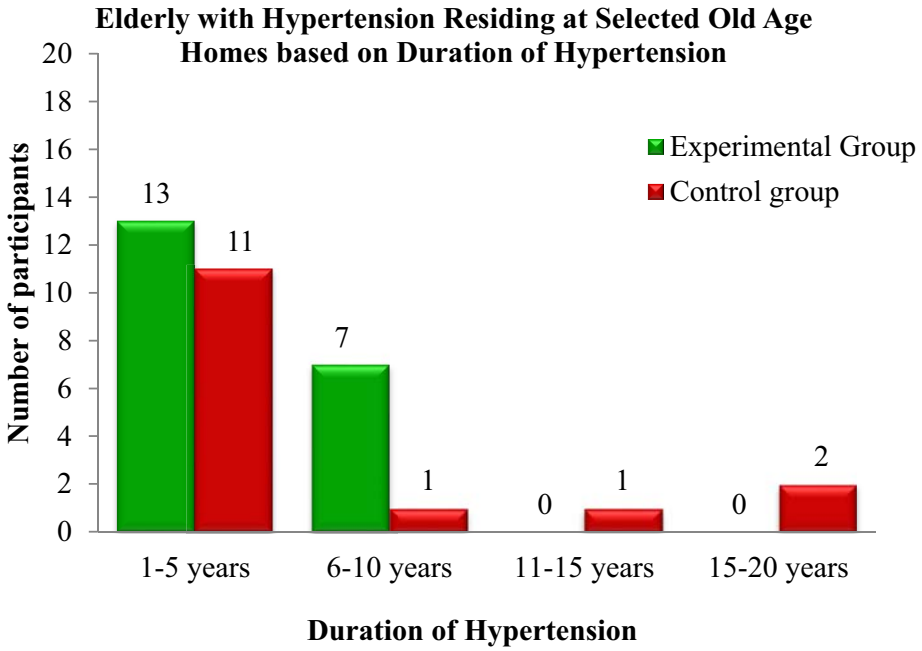


Figure 4.1.11

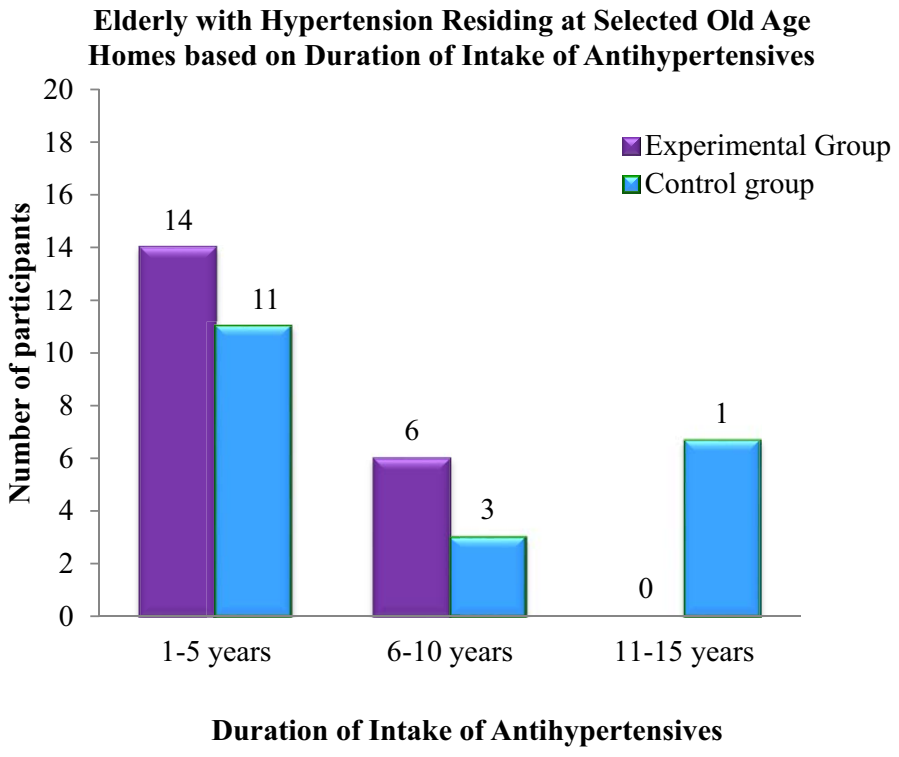


Table 4.1.12

Elderly with Hypertension Residing at Selected Old Age Homes based on Duration of Stay at Old Age Home

(n=35)

S. No	Duration of Stay at Old Age Home	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	< 1Year	2	10	4	26.67
2.	1-5 years	18	90	11	73.33

The above table 4.1.12 depicts about the duration of stay at old age home and the result shows that in the experimental group 90% stay for 1-5 years, 10% stay for less than 1 year. In the control group 73.33% stay for 1-5 years, 26.67% stay for less than 1 year. (Fig 4.1.12)

Table 4.1.13

Elderly with Hypertension Residing at Selected Old Age Homes based on Co morbid Illnesses

(n=35)

S.No	Co morbid Illnesses	Experimental group (n=20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Present	10	50	2	13.33
2.	Absent	10	50	13	86.67

The above table 4.1.13 depicts that in the experimental group 50% have co morbid illnesses such as diabetes mellitus, arthritis, and bronchial asthma and 50% do not have co morbid illnesses. In the control group 13.33% have co morbid illnesses and 86.67% do not have co morbid illnesses. (Fig 4.1.13)

Figure 4.1.12

Elderly with Hypertension Residing at Selected Old Age Homes based on Duration of Stay at Old Age Home

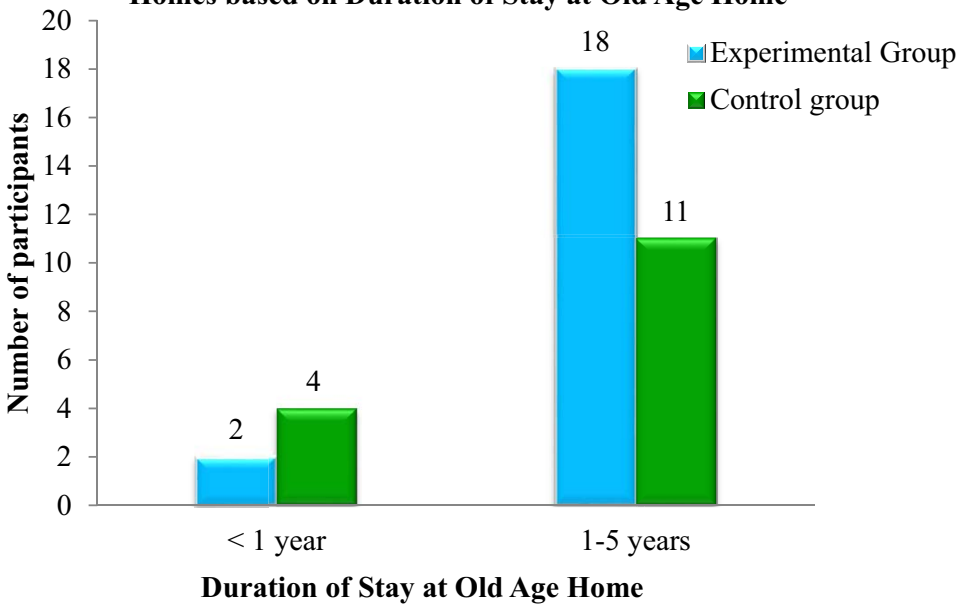
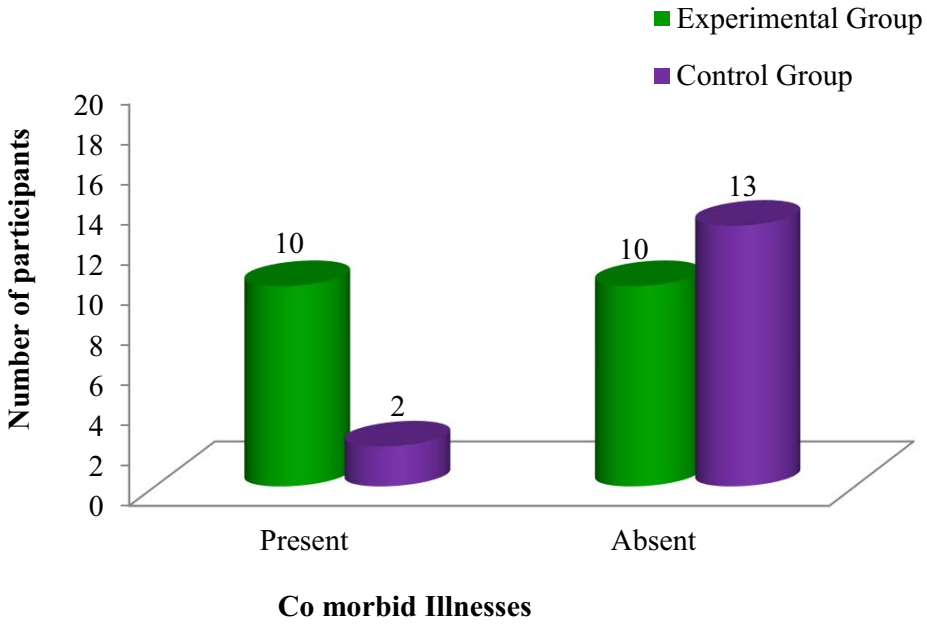


Figure 4.1.13

Co morbid Illnesses of Elderly with Hypertension Residing at Selected Old Age Homes



Section II

4.2 Assessment on Level of Blood Pressure among Elderly with Hypertension Residing at Selected Old Age Homes

This section deals with the level of blood pressure among elderly with hypertension before and after yoga-nidra, which was measured using sphygmomanometer. The level of blood pressure was categorized as mild hypertension, moderate hypertension and severe hypertension. In terms of systolic blood pressure, mild hypertension is 120-139mm of Hg, moderate is 140-159mm of Hg and severe is ≥160mm of Hg. In terms of diastolic blood pressure, mild hypertension is 80-90mm of Hg, moderate is 90-99mm of Hg and severe is ≥100mm of Hg. Collected data were organized, analyzed and presented using descriptive statistics.

Table 4.2.1

Level of Blood Pressure among Experimental and Control Group before Yoga-nidra

(n=35)

Level of Blood Pressure (mm of Hg)		Experimental group (n= 20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Systolic Blood Pressure	Mild	2	10	2	13.33
	Moderate	10	50	10	66.67
	Severe	8	40	3	20
Diastolic Blood Pressure	Mild	3	10	4	26.67
	Moderate	11	50	10	66.67
	Severe	6	40	1	6.66

The table 4.2.1 shows the distribution of elderly with hypertension based on the level of blood pressure before yoga-nidra in the experimental and control group. The level of systolic blood pressure was identified that in the experimental group 10% had mild level, 50% had moderate level and 40% had severe level whereas in the control group 13.33% had mild level, 66.67% had moderate level and 20% had severe level of systolic blood pressure. The level of diastolic blood pressure was identified that in the experimental group 10% had mild level, 50% had moderate level and 40% had severe level whereas in the control group 26.67%, 66.67% had moderate level and 6.66% had severe level of diastolic blood pressure.

Table 4.2.2

Level of Blood Pressure among Experimental and Control Group after Yoga-nidra

(n=35)

Level of Blood Pressure (mm of Hg)		Experimental group (n= 20)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Systolic Blood Pressure	Mild	16	80	1	6.67
	Moderate	3	15	11	73.33
	Severe	1	5	3	20
Diastolic Blood Pressure	Mild	20	100	4	26.67
	Moderate	-	-	10	66.67
	Severe	-	-	1	6.66

The above table 4.2.2 shows the distribution of elderly with hypertension based on the level of blood pressure after yoga-nidra in the experimental and control group. The level of systolic blood pressure was identified that in the experimental group 80% had mild level, 15% had moderate level and 5% had severe level whereas in the control group, 6.67% had mild level, 73.33% had moderate level and 20% had severe level of systolic blood pressure. The level of diastolic blood pressure was identified that in the experimental group 100% had mild level whereas in the control group, 26.67% had mild level, 66.67% had moderate level and 6.66% had severe level of diastolic blood pressure.

Figure 4.2.1

Level of Blood Pressure among Experimental and Control Group before Yoga-nidra

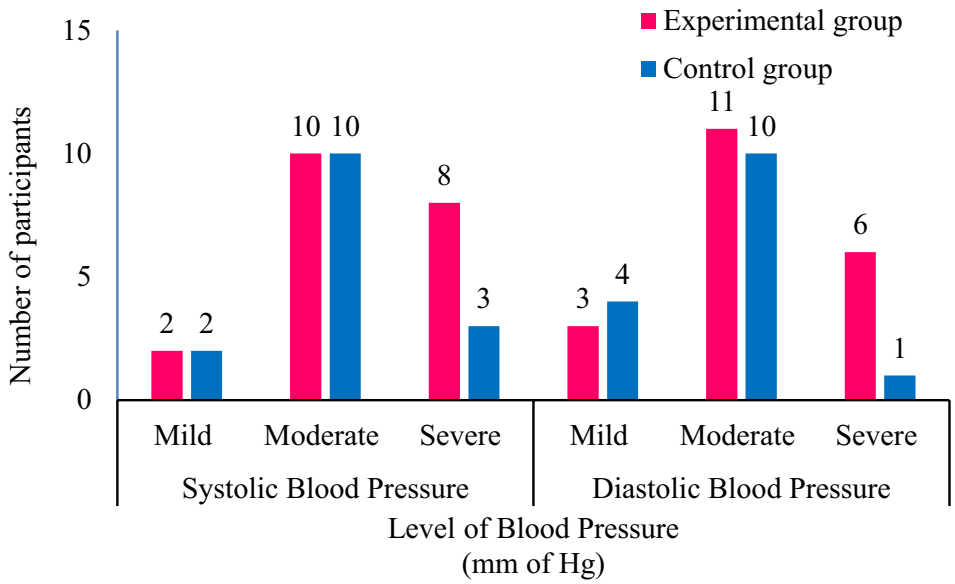
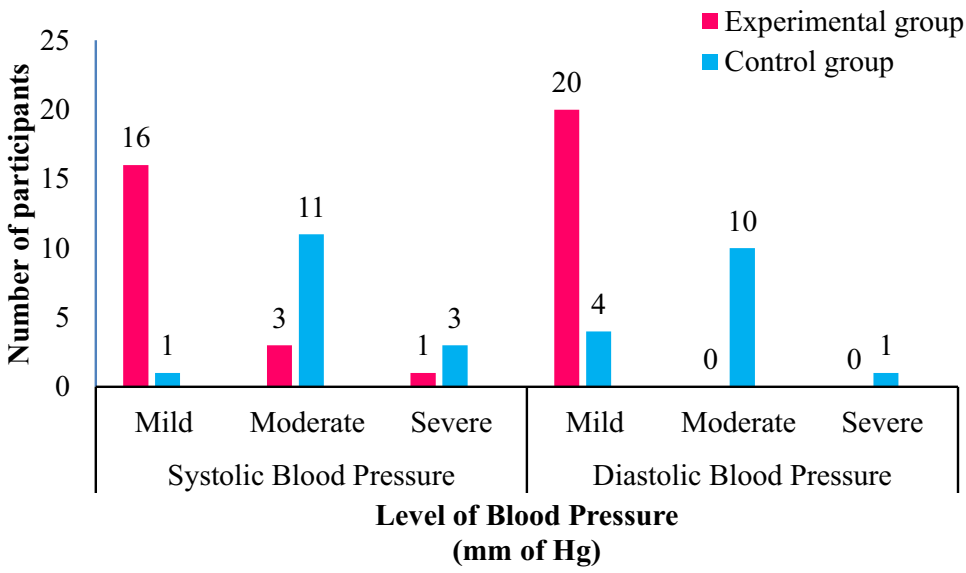


Figure 4.2.2

Level of Blood Pressure among Experimental and Control Group after Yoga-nidra



Section III

4.3 Effect of Yoga-nidra on Blood Pressure among Elderly with Hypertension

This section deals with the analysis and interpretation of the effect of yoga-nidra among elderly with hypertension. Analyzed data were presented on the following headings.

1. Comparison on level of blood pressure among experimental and control group before and after yoga-nidra.
2. Level of blood pressure among elderly with hypertension in experimental group.
3. Level of blood pressure among elderly with hypertension in control group.
4. Effect of yoga-nidra on blood pressure among elderly with hypertension.

Table 4.3.1

Comparison on Level of Blood Pressure among Experimental and Control group before and after Yoga-nidra

(n=35)

Level of blood pressure (mm of Hg)		Experimental group (n=20)				Control group (n=15)			
		Before Intervention		After Intervention		Before Intervention		After Intervention	
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Systolic Blood Pressure	Mild	2	10	16	80	2	13.33	1	6.67
	Moderate	10	50	3	15	10	66.67	11	73.33
	Severe	8	40	1	5	3	20	3	20
Diastolic Blood Pressure	Mild	3	10	20	100	4	26.67	4	26.67
	Moderate	11	50	-	-	10	66.67	10	66.67
	Severe	6	40	-	-	1	6.66	1	6.66

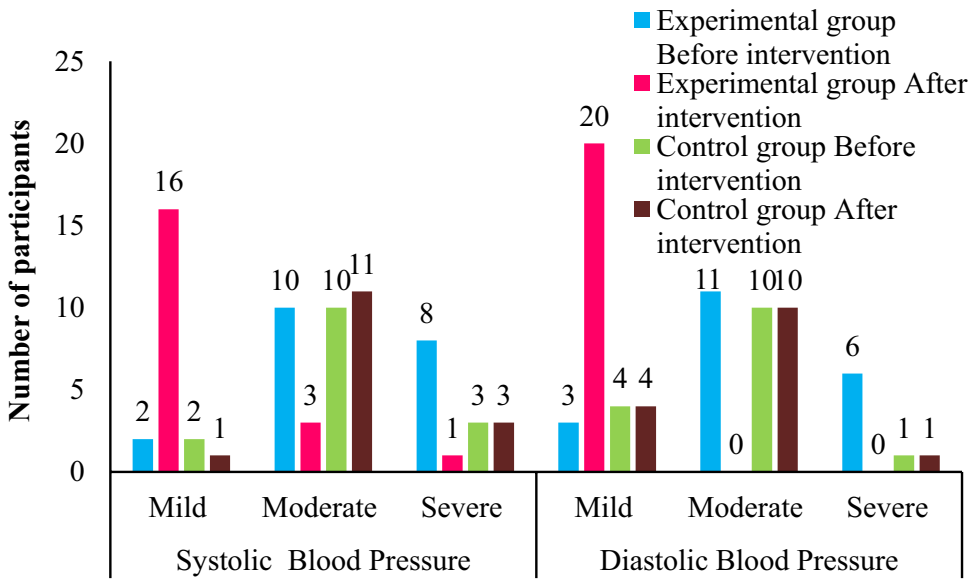
The above table showed the level of blood pressure before and after yoga-nidra in the experimental and control group. The level of systolic blood pressure in the experimental group before intervention was found that, 2 (10%) had mild level, 10 (50%) had moderate level and 8 (40%) had severe level whereas after yoga-nidra, it was identified that 16 (80%) members had mild level, 3 (15%) had moderate level and 1 (5%) had severe level of systolic blood pressure. The mean level of systolic blood pressure in experimental group got reduced from 154.5 to 130.4 mm of Hg. In the control group the level of systolic blood pressure before intervention showed that 2 (13.33%) elderly had mild level,

10 (66.67%) had moderate level and 3 (20%) had severe level whereas after intervention showed that, 1 (6.67%) elderly had mild level, 11 (73.33%) had moderate level and 3 (20%) had severe level of systolic blood pressure. The mean level of systolic blood pressure before and after intervention in control group was 146.67 and 147.33 respectively.

The level of diastolic blood pressure before yoga-nidra in the experimental group was found that, 3 (10%) elderly from experimental group had mild level, 11 (50%) had moderate level and 6 (40%) had severe level whereas after yoga-nidra, it was identified that all 20 (100%) had mild level of diastolic blood pressure. The mean level of diastolic blood pressure in experimental group got reduced from 92.2 to 82.8 mm of Hg .The level of diastolic blood pressure before and after intervention in the control group showed that 4 (26.67%) elderly had mild level, 10 (66.67%) had moderate level and 1 (6.66%) had severe level. The mean level of diastolic blood pressure before and after intervention in control group was 88 and 88.53 respectively.

Figure 4.3.1

Comparison on Level of Blood Pressure among Experimental and Control Group before and after Yoga-nidra



Level of blood pressure (mm of Hg)

Table 4.3.2

Level of Blood Pressure among Elderly with Hypertension in Experimental Group

(n=20)

Level of Blood Pressure (mm of Hg)		Mean	SD	Mean difference	't' value
Systolic blood pressure	Before intervention	154.5	17.74	24.1	12.48***
	After intervention	130.4	11.68		
Diastolic blood pressure	Before intervention	92.2	7.20	9.4	6.86***
	After intervention	82.8	3.06		

***Significant at 0.001 level

Paired 't' test was used to assess the level of blood pressure among elderly with hypertension before and after the intervention. It was identified that, the mean level of systolic blood pressure before and after yoga-nidra among the experimental group was 154.5 and 130.4mm of Hg respectively with a mean difference of 24.1. Standard deviation was 17.74, 11.68 and the calculated 't' value was 12.48. While comparing with table value, it showed that the calculated 't' value was greater than the table value at 0.001 level of significance. The mean level of diastolic blood pressure before and after yoga-nidra among the experimental group was 92.2 and 82.8mm of Hg respectively with a mean difference of 9.4. Standard deviation was 7.20, 3.06 and the calculated 't' value was 6.86. While comparing with table value, it showed that the calculated 't' value was greater than the table value at 0.001 level of significance. Thus the research hypothesis, 'There will be a significant difference in the level of blood pressure among elderly with hypertension in experimental group before and after yoga-nidra' was accepted.

Table 4.3.3

Level of Blood Pressure among Elderly with Hypertension in Control Group

(n=15)

Level of Blood Pressure (mm of Hg)		Mean	SD	Mean difference	't' value
Systolic blood pressure	Before intervention	146.67	12.47	-0.66	0.27
	After intervention	147.33	11.23		
Diastolic blood pressure	Before intervention	88	5.41	-0.53	0.29
	After intervention	88.53	4.97		

Paired ‘t’ test was used to assess the level of blood pressure among elderly with hypertension in the control group. It was identified that, the mean level of systolic blood pressure before and after the intervention was 146.67 and 147.33 respectively with a mean difference of -0.66. Standard deviation was 12.47 and 11.23 respectively and the calculated ‘t’ value was 0.27 which was lesser than the table value. The mean level of diastolic blood pressure before and after the intervention was 88 and 88.53 respectively with a mean difference of -0.53. Standard deviation were 5.41 and 4.97 respectively and the calculated ‘t’ value was 0.29 which was lesser than the table value. Hence significant difference was not found in the level of blood pressure among elderly with hypertension in control group.

Table 4.3.4

Effect of Yoga-nidra on Blood Pressure among Elderly with Hypertension

(n=35)

Blood Pressure (mm of Hg)	Group	Mean	SD	Mean difference	't' value
Systolic blood pressure	Experimental Group	130.4	11.68	-16.93	4.19***
	Control Group	147.33	11.23		
Diastolic blood pressure	Experimental Group	82.8	3.06	-5.73	3.98***
	Control Group	88.53	4.97		

***Significant at 0.001 level

Un paired 't' test was used to compare the level of blood pressure after the intervention among the experimental and control group. It was identified that the mean level of systolic blood pressure among elderly with hypertension in experimental and control group was 130.4 and 147.33 respectively with a mean difference of -16.93. Likewise the standard deviation of the experimental and control group was 11.68 and 11.23 respectively. The calculated ‘t’ value was 4.19 which was greater than the table value at 0.001 level of significance. The mean level of diastolic blood pressure among elderly with hypertension in the experimental and control group was 82.8 and 88.53 respectively with a mean difference of -5.73. Likewise the standard deviation of the experimental and control group was 3.06 and 4.97 respectively. The calculated ‘t’ value was 3.98 which was greater than the table value at 0.001 level of significance. Hence the research hypothesis ‘There will be a significant difference in the level of blood pressure among elderly with hypertension in experimental and control group’ was accepted.

Section IV

4.4 Association between the level of Blood Pressure before intervention with Selected Demographic Variables

Chi square test (with Yates correction) was used to find the association between level of blood pressure before intervention and selected demographic variables like age, gender, educational status, religion, personal habits and family history of hypertension.

Table 4.4.1

Association between the level of Systolic Blood Pressure before intervention and Selected Demographic Variables among Elderly with Hypertension

(n=35)

S.No	Demographic variables	Category	Frequency	Level of Systolic Blood Pressure (mm of Hg)			χ^2 value (Yates correction)	Degree of freedom (r-1)(c-1)	χ^2 Table Value
				Mild	Moderate	Severe			
1.	Age	61-70 years	18	1	8	9	10.79*	4	9.49
		71-80 years	13	3	8	2			
		>81 years	4	0	4	0			
2.	Gender	Male	8	1	4	3	0.66	2	5.99
		Female	27	3	16	8			
3.	Education	Illiterate	19	4	12	3	13.07*	4	9.49
		Primary	13	0	8	5			
		High School	3	0	0	3			
4.	Religion	Hindu	23	2	12	9	2.35	2	5.99
		Christian	12	2	8	2			

S.No	Demographic variables	Category	Frequency	Level of Systolic Blood Pressure (mm of Hg)			χ^2 value (Yates correction)	Degree of freedom (r-1)(c-1)	χ^2 Table value
				Mild	Moderate	Severe			
5.	Personal Habits	Smoking	5	0	3	2	7.63	4	9.49
		Betel chewing	3	0	3	0			
		No habits	27	2	15	10			
6.	Family history of Hypertension	Yes	1	0	0	1	7.59*	2	5.99
		No	34	4	20	10			

*Significance at 0.05 level

Table 4.4.1 shows the association between level of systolic blood pressure and the selected demographic variables among elderly with hypertension. Selected demographic variables were age, gender, educational status, religion, personal habits and family history of hypertension.

It was found that chi square value for age (χ^2= 10.79), education (χ^2= 13.07) and family history of hypertension (χ^2= 7.59) had association with the level of systolic blood pressure among elderly with hypertension at 0.05 level of significance.

Gender (χ^2= 0.66), religion (χ^2 = 2.35) and personal habits (χ^2 = 7.63) had no association with the level of systolic blood pressure among elderly with hypertension.

Table 4.4.2

Association between the level of Diastolic Blood Pressure before intervention and Selected Demographic Variables among Elderly with Hypertension

(n=35)

S.No	Demographic variables	Category	Frequency	Level of Diastolic Blood Pressure (mm of Hg)			χ^2 value (Yates correction)	Degree of freedom (r-1)(c-1)	χ^2 Table Value
				Mild	Moderate	Severe			
1.	Age	61-70 years 71-80 years >81 years	18 13 4	2 3 2	9 10 2	7 0 0	11.18*	4	9.49
2.	Gender	Male Female	8 27	0 7	4 17	4 3	7.15*	2	5.99
3.	Education	Illiterate Primary High School	19 13 3	3 4 0	15 4 2	1 5 1	10.30*	4	9.49
4.	Religion	Hindu Christian	23 12	3 4	13 8	7 0	5.88	2	5.99
5.	Personal Habits	Smoking Betel chewing No habits	5 3 27	1 1 7	3 2 15	1 0 5	2.87	4	9.49
6.	Family history of Hypertension	Yes No	1 34	0 7	0 21	1 6	5.17	2	5.99

*Significance at 0.05 level

Table 4.4.2 shows the association between level of diastolic blood pressure and the selected demographic variables among elderly with hypertension. Selected demographic variables were age, gender, educational status, religion, personal habits and family history of hypertension.

It was found that the chi square value for age (χ^2= 11.18), gender (χ^2= 7.15) and education (χ^2= 10.30) had association with the level of diastolic blood pressure among elderly with hypertension at 0.05 level of significance.

Religion (χ^2= 5.88), personal habits (χ^2 = 2.87) and family history of hypertension (χ^2 = 5.17) had no association with the level of diastolic blood pressure among elderly with hypertension.

RESULTS AND DISCUSSION

This chapter deals with the interpretation of the results and the discussion of the findings. The main aim of the study was to assess the effect of yoga-nidra on blood pressure among elderly with hypertension. Quasi experimental pretest posttest control group design was adopted in this study. By using convenient sampling technique, 20 elderly with hypertension from Universal Peace Foundation were assigned for experimental group and 15 elderly with hypertension from Ozanam Home for Aged for control group. Yoga-nidra was given for the elderly in the experimental group for 20 minutes in the morning between 6-8 AM once daily for 15 days. In the experimental and control group blood pressure measurements were taken on the first and fifteenth day in the morning between 6-8 AM. The collected data were analyzed and the findings are discussed based on the objectives of the study.

5.1 Demographic profile

In the present study, out of 20 elderly in the experimental group, 10 (50%) elderly belongs to the age group of 61-70 years, 8 (40%) belongs to 71-80 years of age, 2 (10%) belongs to 81 years of age and above. In the control group, 8 (53.34%) elderly belong to the age group of 61-70 years, 5 (33.33%) belongs to 71-80 years of age and 2 (13.33%) belongs to 81 years and above.

The data on gender reveals that, in the experimental group 14 (70%) were females and 6 (30%) were males and in control group 13 (86.67%) were females, 2 (13.33%) were males.

The educational status of elderly in the experimental group reveals that 10 (50%) were illiterates, 9 (45%) had primary level education, 1 (5%) had high school education. In the control group 9 (60%) were illiterates, 4 (26.67%) had primary level education and 2 (13.33%) had higher school education.

Data on marital status of elderly explain that in the experimental group and control group all (100%) were married.

The data on stay with spouse among the elderly reveals that in the experimental group all 20 (100%) were staying alone as they fall into the category of widows and widowers and in the control group 1 (6.67%) is staying with spouse while the remaining 14 (93.33%) are staying alone as they are widows and widowers.

The data on religion among elderly reveals that in the experimental group 20 (100%) belong to Hindu religion and in the control group 3 (20%) belong to Hindu religion and 12 (80%) are Christians.

The data on personal habits reveals that in the experimental group 16 (80%) are not having any personal habits, 3 (15%) smoke, 1 (5%) has the habit of betel chewing. In the control group 11 (73.34%) do not have any personal habits, 2 (13.33%) have smoking and betel chewing habit respectively.

The data on family history of hypertension reveals that in the experimental group19 (95%) are not having family history of hypertension and 1 (5%) has the family history of hypertension. In the control group 20(100%) are not having family history of hypertension.

The data on hobbies among elderly reveals that in the experimental group 18 (90%) have hobbies such as cooking, gardening, listening to music and 1 (10%) is not having any hobbies. Among the control group 15 (100%) have hobbies such as gardening, listening to music, watching TV and hand craft works.

The data on duration of hypertension reveals that in the experimental group 13 (65%) have hypertension for 1-5 years and 7 (35%) for 6-10 years and in the control group 11 (73.33%) have hypertension for 1-5 years, 1 (6.67%) for 6-10 years, 1 (6.67%) for 11-15 years and 2 (13.33%) for 15-20 years.

The data on duration of intake of antihypertensives reveals that in the experimental group 14 (70%) intake it for 1-5 years and 6 (30%) for 6-10 years. In the control group 11 (73.33%) intake it for 1-5 years, 3 (20%) for 6-10 years and 1(6.67%) for 11-15 years.

The data on the duration of stay at old age reveals that in the experimental group 18 (90%) staying between 1-5 years, 2 (10%) staying for less than 1 year. In the control group 11 (73.33%) staying between 1-5 years, and 4 (26.67%) staying for less than 1 year.

The data on co morbid illnesses among elderly reveals that in the experimental group 10 (50%) have co morbid illnesses such as diabetes mellitus, arthritis and bronchial asthma and 10 (50%) are not having co morbid illnesses. In the control group 2 (13.33%) have co morbid illnesses and 11 (86.67%) not having co morbid illnesses.

5.2 Assess the level of Blood Pressure among Elderly with Hypertension Residing at Selected Old Age Homes

The level of systolic blood pressure before yoga-nidra in the experimental group reveals that 10 (50%) had moderate level, 8 (40%) had severe level and 2 (10%) had mild level whereas in control group 10 (66.67%) had moderate level, 3 (20%) had severe level and 2 (13.33%) had mild level of systolic blood pressure.

The level of diastolic blood pressure before yoga-nidra in experimental group reveals that 11 (50%) had moderate level, 6 (40%) had severe level and 3 (10%) had mild level whereas in control group, 10 (66.67%) had moderate level, 1 (6.66%) had severe level and 4 (26.67%) had mild level of diastolic blood pressure.

5.3 Effect of Yoga-nidra on Blood Pressure among Elderly with Hypertension residing at Selected Old Age Homes

After assessing the level of blood pressure among elderly with hypertension, yoga-nidra was given once daily in the morning for 20 minutes between 6-8 AM for 15 days.

5.3.1 Level of Blood Pressure among Experimental and Control group Before and After Yoga-nidra

The results of level of systolic blood pressure before yoga-nidra in the experimental group showed that, 10 (50%) elderly had moderate level, 8 (40%) had severe level and 2 (10%) had mild level whereas after intervention, it was identified that 16 (80%) had mild level, 3 (15%) had moderate level and 1 (5%) had severe level of systolic blood pressure.

In the control group, the level of systolic blood pressure before intervention showed that 10 (66.67%) had moderate level, 3 (20%) had severe level and 2 (13.33%) had mild level whereas after intervention showed that, 11 (73.33%) had moderate level, 3 (20%) had severe level and 1 (6.67%) had mild level of systolic blood pressure.

The results of level diastolic blood pressure before yoga-nidra in the experimental group was found that, 11 (50%) elderly from the experimental group had moderate level, 6 (40%) had severe level and 3 (10%) had mild level whereas after intervention, it was identified that all the 20 (100%) had mild level of diastolic blood pressure.

In the control group, there was no change in the diastolic blood pressure before and after intervention. It showed that 10 (66.67%) had moderate level, 2 (20%) had severe level and 4 (13.33%) had mild level respectively before and after intervention.

5.3.2 Level of Blood pressure among Elderly with Hypertension in Experimental Group

Paired 't' test was used to assess the level of blood pressure among elderly with hypertension before and after the intervention. It was identified that, the mean level of systolic blood pressure before and after yoga-nidra among the experimental group was 154.5 and 130.4 respectively with a mean difference of 24.1. Standard deviation was 17.74, 11.68 and the calculated 't' value was 12.48. While comparing with table value, it showed that the calculated 't' value was greater than the table value at 0.001 level of significance.

The mean level of diastolic blood pressure before and after yoga-nidra among the experimental group was 92.2 and 82.8 respectively with a mean difference of 9.4. Standard deviation was 7.20, 3.06 and the calculated 't' value was 6.86. While comparing with table value, it showed that the calculated 't' value was greater than the table value at 0.001 level of significance. Thus the research hypothesis, 'There will be a significant difference in the level of blood pressure among elderly with hypertension in experimental group before and after Yoga-nidra' was accepted.

Kumar K (2005) conducted a study to find out the effect of yoga nidra on hypertension and other psychological co-relates. Practice time was 30 minutes and the duration was fifteen days. Forty people suffering with mild hypertension (30 males and 10 females) were taken for the study. Where the males were businessman and females were house wives. The means of pre and post values of systolic blood pressure were 155 and 125 and the 't' value was 10.13 whereas for diastolic pressure were 98 and 76 and the 't' value was 8.09. The result showed a significant change as yoga nidra positively decrease the blood pressure (both systolic and diastolic) at 0.01 level.

5.3.3 Level of Blood Pressure among Elderly with Hypertension in control group

Paired 't' test was used to assess the level of blood pressure among elderly with hypertension in control group. It was identified that, the mean level of systolic blood pressure before and after the intervention was 146.67 and 147.33 respectively with a mean difference of -0.66. Standard deviation was 12.47 and 11.23 respectively and the calculated 't' value was 0.27 which was lesser than the table value.

The mean level of diastolic blood pressure before and after the intervention was 88 and 88.53 respectively with a mean difference of -0.53. Standard deviation were 5.41 and 4.97 respectively and the calculated ‘t’ value was 0.29 which was lesser than the table value. Hence significant difference was not found in the level of blood pressure among elderly with hypertension in control group.

5.3.4 Effect of Yoga-nidra on Blood Pressure among Elderly with Hypertension

Un paired 't' test was used to compare the level of blood pressure after yoga-nidra among experimental and control group. It was identified that the mean level of systolic blood pressure among elderly with hypertension in experimental and control group was 130.4 and 147.33 respectively with a mean difference of -16.93. Likewise the standard deviation of the experimental and control group was 11.68 and 11.23 respectively. The calculated ‘t’ value was 4.19 which was greater than the table value at 0.001 level of significance.

The mean level of diastolic blood pressure among elderly with hypertension in experimental and control group was 82.8 and 88.53 respectively with a mean difference of -5.73. Likewise the standard deviation of the experimental and control group was 3.06 and 4.97 respectively. The calculated ‘t’ value was 3.98 which was greater than the table value at 0.001 level of significance. Hence the research hypothesis ‘There will be a significant difference in the level of blood pressure among elderly with hypertension in experimental and control group’ was accepted.

Deepa T (2012) conducted a study on the effect of yoga and meditation on mild to moderate hypertensives. Yoga nidra practiced for 45 minutes daily in the morning and evening. Parameters were recorded at the beginning and again at the end of 3 months. The study shows a significant reduction of systolic blood pressure in sitting position from (151.47mm Hg to 129.33 mm Hg and the diastolic blood pressure reduced from 92.80 to 78.8mm Hg. The result shows a significant reduction of blood pressure after yoga intervention ($p < 0.01$).

5.4 Association between the Level of Blood Pressure Before Intervention and Selected Demographic Variables

The association between selected demographic variables and the level of blood pressure before intervention among elderly with hypertension was calculated using the Chi square test. It was found that chi square value for age ($\chi^2 = 10.79$), education ($\chi^2 = 13.07$) and Family history of hypertension ($\chi^2 = 7.59$) had association with the level of systolic blood pressure among elderly with hypertension at 0.05 level of significance.

Gender ($\chi^2 = 0.66$), religion ($\chi^2 = 2.35$) and personal habits ($\chi^2 = 7.63$) had no association with the level of systolic blood pressure among elderly with hypertension.

It was found that chi square value for Age ($\chi^2 = 11.18$), Gender ($\chi^2 = 7.15$) and Education ($\chi^2 = 10.30$) had association with the level of diastolic blood pressure among elderly with hypertension at 0.05 level of significance.

Religion (χ^2= 5.88), Personal habits (χ^2 = 2.87) and Family history of hypertension (χ^2 = 5.17) had no association with the level of diastolic blood pressure among elderly with hypertension.

Radhakrishnan and Balamurugan (2013) conducted a cross- sectional study on prevalence of diabetes and hypertension among geriatric population in a rural community of Tamil Nadu. The study result shows that factor like age had a statistical significant association towards diabetes and hypertension.

Rajeev et al (2007) conducted a study among elderly rural population of Jaipur found that age, smoking as significant determinants of hypertension.

Monane et al (1996) measured that good compliance was associated with advanced age (85 or older).

SUMMARY AND CONCLUSION

This chapter deals with the findings, recommendation and implications in the field of nursing education, practice, administration and nursing research. The study was conducted to assess the effect of yoga-nidra on blood pressure among elderly with hypertension at selected old age homes, Coimbatore.

Quasi experimental pretest posttest control group design was used for the study. Widen Bach's helping Art Nursing Theory proposed in the year 1964 was used as a conceptual framework for the present study. The study was conducted in Universal Peace Foundation and Ozanam Home for Aged, Coimbatore. For experimental group elderly with hypertension were selected from Universal Peace Foundation and for control group from Ozanam Home for Aged. Blood Pressure measurements were taken by using standard sphygmomanometer. In this study, 20 elderly were in the experimental group and 15 in the control group. In the experimental group, blood pressure was measured 10 minutes prior to the intervention and yoga-nidra was given for 20 minutes in the morning between 6 to 8 AM once daily for 15 days by the researcher. Routine treatment was given for the control group. The blood pressure measurements were taken 10 minutes after the intervention for experimental group on the 15^{th} day and for the control group the blood pressure measurements were taken on the first and fifteenth day in the morning between 6-8 AM. The data analysis was done using descriptive and inferential statistics.

6.1 Major Findings of the Study

6.1.1 In experimental and control group, a majority of 10 (50%) and 8 (53.34%) elderly belong to the age group between 61-70 years.

6.1.2 Data on gender reveals that, the majority of elderly are females in both experimental and control group whose strength in number and percentage are 14 (70%) and 13 (86.67%) successively.

6.1.3 Educational status of elderly reveals that, most of them were illiterates in both experimental 10 (50%) and control group 9 (60%).

6.1.4 Data on personal habits reveals that, majority were not having any personal habits in both experimental 16 (80%) and control group 11 (73.34%).

6.1.5 Family history of hypertension reveals that, majority were not having family history of hypertension in both experimental, 19 (95%) and control group, 15 (100%).

6.1.6 Data on hobbies reveals that, majority were having hobbies such as cooking, gardening and listening to music in both experimental 18 (90%) and control group, 15 (100%).

6.1.7 Data on duration of hypertension reveals that, majority of elderly are having hypertension for 1-5 years in both experimental (65%) and control group (73.33%).

6.1.8 Data on duration of intake of antihypertensives reveals that, majority of elderly were taking antihypertensives for 1-5 years in both experimental (70%) and control group (73.33%).

6.1.9 Data on duration of stay at old age home among elderly reveals that, majority were staying between 1-5 years in both experimental (90 %) and control group (73.33%).

6.1.10 Data on co morbid illnesses among elderly reveals that, majority were not having co morbid illnesses in both experimental (50 %) and control group (86.67%).

6.1.11 The study shows that majority of elderly with hypertension had moderate level of systolic blood pressure and diastolic blood pressure in both experimental (50%) and control group (66.67%) before yoga-nidra.

6.1.12 The study shows that the mean systolic blood pressure and diastolic blood pressure was found to be reduced from 154.5 to 130.4 and 92.2 to 82.8 respectively after yoga-nidra in experimental group.

6.1.13 The study shows that in control group there is no change in the level of systolic and diastolic blood pressure before and after the intervention, majority are having moderate level of systolic (66.67% & 73.33) and diastolic blood pressure (66.67%) respectively.

6.1.14 The factors such as age and education had significant association with the level of systolic and diastolic blood pressure.

6.2 Limitation

6.2.1 Sample size of the study was small which limits the generalization of the study findings.

6.2.2 The emotions and feelings of study participants during the practice was not under the control.

6.3 Recommendations

6.3.1 A similar study can be conducted among the people with hypertension of different age groups.

6.3.2 A study can be conducted to compare the level of blood pressure among male and female gender with hypertension.

6.3.3 Further research can be carried out to find out the effect of yoga-nidra on other diseases like diabetes mellitus, menstrual disorders, stress and anxiety disorders.

6.4 Nursing Implication

6.4.1 Nursing Education

Yoga-nidra used in the present study is proved that it can reduce the level of blood pressure among elderly with hypertension. Nurse educators need to have knowledge and awareness on yoga-nidra, as it is an effective measure to control hypertension. So, the importance of yoga-nidra can be utilized and included in the nursing curriculum.

6.4.2 Nursing Administration

The nurse administrator can draw written policies regarding yoga-nidra to decrease the level of blood pressure among elderly with hypertension. There by the staff nurses are kept in pace with the evidence based practice.

6.4.3 Nursing Practice

Yoga-nidra is an effective measure to reduce the level of blood pressure among elderly with hypertension. Nurses working in various settings should be trained to focus on this intervention among the people with hypertension. Elderly with hypertension can be given training for yoga-nidra to practice in their day to day life.

6.4.4 Nursing Research

The study has tested the effectiveness of yoga-nidra on blood pressure among elderly with hypertension. It can be used as evidence based practice for reducing blood pressure among people with hypertension. Similar studies can be undertaken for assessing the level of blood pressure among people of different ages with hypertension in different settings.

6.5 Conclusion

Chronic morbidities like hypertension is becoming a common health problem among the elderly population accounting for 29.8% in India. The treatment of hypertension requires optimal control and persistent adherence to medications which in turn leads to many side effects and adverse drug interactions. Hence controlling of hypertension by relaxation and meditation techniques are highly recommended as primary prevention or as therapy with or without drugs. Among them yoga-nidra is found to be non invasive, easy to practice and cost effective which do not have appreciable side effects in controlling hypertension. The Present study shows a significant difference in the level of blood pressure at 0.001 level, hence yoga-nidra can be considered as an effective practice to be introduced as a preventive measure of the silent killer hypertension.

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Tool to assess the level of Blood Pressure among Elderly

with Hypertension

Section-A

Demographic Variable

1. Age

   a) 61-70 years b) 71-80 years c) 81 years and above

2. Gender

   a) Male b) Female

3. Educational status

   a) Illiterate b) Primary c) High school d) Higher secondary

   e) Degree

4. Marital status

   a) Single b) Married c) Widow/ Widower d) Divorce

5. Are you staying with your spouse?

   a) Yes b) No

   If No, why? …….

6. Religion

   a) Hindu b) Christian c) Muslim d) Others

7. Personal habits

   a) Alcohol b) Smoking c) Betel chewing d) No habits

8. Family history of hypertension

a) Yes b) No

9. Do you have any hobbies?

a) Yes b) No

If yes, specify ……..

Health History

1. How long you are suffering with hypertension? | |
2. How long you are on antihypertensives? | |
3. How long you are staying in old age home? | |
4. Co morbid illnesses

a) Present b) Absent

Section-B

Tool to measure Blood Pressure

Sphygmomanometer and stethoscope

ANNEXURE I

Effect of Yoga-nidra on Blood Pressure among Elderly with Hypertension

Student 't' test was used to analyse the effect of Yoga-nidra on blood pressure (Systolic and Diastolic) among elderly with hypertension between experimental and control group

$$t = \frac{\overline{X_1} - \overline{X_2}}{SE}$$

Where,

SE (Standard Error) $= SD \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$

SD (Combined standard deviation) $= \sqrt{\frac{\sum\left(x_1 - \overline{x_1}\right)^2 + \sum\left(x_2 - \overline{x_2}\right)^2}{n_1 + n_2 - 2}}$

$\overline{X}_1$ = Mean Blood Pressure (Systolic and Diastolic) level of the experimental group

$\overline{X}_2$ = Mean Blood Pressure (Systolic and Diastolic) level of the control group

n_1 = Number of samples in experimental group

n_2 = Number of samples in control group

ANNEXURE I-1

Effect of Yoga-nidra on Systolic Blood Pressure among Elderly with Hypertension

S.No	Experimental Group			Control Group		
	X_1	X_1-$\overline{X1}$=D_1	D_1^2	X_2	X_2-$\overline{X2}$=D_2	D_2^2
1.	138	7.6	57.76	150	2.67	7.1289
2.	148	17.6	309.76	140	-7.33	53.7289
3.	126	-4.4	19.36	140	-7.33	53.7289
4.	160	29.6	876.16	150	2.67	7.1289
5.	120	-10.4	108.16	140	-7.33	53.7289
6.	120	-10.4	108.16	170	22.67	513.9289
7.	130	-0.4	0.16	130	-17.33	300.3289
8.	120	-10.4	108.16	150	2.67	7.1289
9.	138	7.6	57.76	160	12.67	160.5289
10.	120	-10.4	108.16	140	-7.33	53.7289
11.	120	-10.4	108.16	150	2.67	7.1289
12.	120	-10.4	108.16	140	-7.33	53.7289
13.	126	-4.4	19.36	140	-7.33	53.7289
14.	136	5.6	31.36	140	-7.33	53.7289
15.	120	-10.4	108.16	170	22.67	513.9289
16.	140	9.6	92.16			
17.	120	-10.4	108.16			
18.	130	-0.4	0.16			
19.	126	-4.4	19.36			
20.	150	19.6	384.16			
	2608		2732.8	2210		1893.3335

$$SD = \sqrt{\frac{\sum\left(x_1-\overline{x_1}\right)^2+\sum\left(x_2-\overline{x_2}\right)^2}{n_1+n_2-2}} = \sqrt{\frac{2732.8+1893.3335}{20+15-2}} = 11.84$$

$$SE = SD\sqrt{\frac{1}{n_1}+\frac{1}{n_2}} = 11.84\sqrt{\frac{1}{20}+\frac{1}{15}} = 4.14$$

$$t = \frac{\overline{X_1}-\overline{X_2}}{SE} = \frac{130.4-147.33}{4.14} = -4.09$$

t = 4.09

ANNEXURE I-2

Effect of Yoga-nidra on Diastolic Blood Pressure among Elderly with Hypertension

S.No	Experimental Group			Control Group		
	X_1	$X_1-\overline{X1}=D_1$	D_1^2	X_2	$X_2-\overline{X2}=D_2$	D_2^2
1.	80	-2.8	7.84	90	1.47	2.1609
2.	88	5.2	27.04	90	1.47	2.1609
3.	80	-2.8	7.84	90	1.47	2.1609
4.	80	-2.8	7.84	90	1.47	2.1609
5.	80	-2.8	7.84	90	1.47	2.1609
6.	86	3.2	10.24	90	1.47	2.1609
7.	84	1.2	1.44	90	1.47	2.1609
8.	80	-2.8	7.84	80	-8.53	72.7609
9.	84	1.2	1.44	90	1.47	2.1609
10.	80	-2.8	7.84	80	-8.53	72.7609
11.	84	1.2	1.44	90	1.47	2.1609
12.	80	-2.8	7.84	88	-0.53	0.2809
13.	84	1.2	1.44	80	-8.53	72.7609
14.	80	-2.8	7.84	100	11.47	131.5609
15.	80	-2.8	7.84	90	1.47	2.1609
16.	88	5.2	27.04			
17.	80	-2.8	7.84			
18.	84	1.2	1.44			
19.	88	5.2	27.04			
20.	86	3.2	10.24			
	1656		187.2	1328		371.7335

$$SD = \sqrt{\frac{\sum\left(x_1-\overline{x_1}\right)^2+\sum\left(x_2-\overline{x_2}\right)^2}{n_1+n_2-2}} = \sqrt{\frac{187.2+371.73}{20+15-2}} = 4.12$$

$$SE = SD\sqrt{\frac{1}{n_1}+\frac{1}{n_2}} = 4.12\sqrt{\frac{1}{20}+\frac{1}{15}} = 1.44$$

$$t = \frac{\overline{X_1}-\overline{X_2}}{SE} = \frac{82.8-88.53}{1.44} = -3.98$$

t = 3.98

ANNEXURE II

Level of Blood Pressure among Elderly with Hypertension

Paired 't' test was used to analyse the difference between pre and post test level of blood pressure in both groups.

$$t = \frac{\bar{d}}{SE}$$

where,

$$SE = \frac{SD}{\sqrt{n}}$$

$$SD = \sqrt{\frac{\sum D^2 - \frac{\left(\sum D\right)^2}{n}}{n-1}}$$

$\bar{d}$ = Mean of difference between test score

SE = Standard Error

ΣD = Sum of mean difference between test scores

ΣD^2 = Sum of square of mean difference between the test scores

SD = Standard deviation of the test score

n = Number of samples

ANNEXURE II -1

Level of Systolic Blood Pressure among Elderly with Hypertension in Experimental Group

S.No	Pre test (x_1)	Post test (x_2)	$X_1-X_2=D$	D^2
1	170	138	32	1024
2	180	148	32	1024
3	130	126	4	16
4	190	160	30	900
5	150	120	30	900
6	140	120	20	400
7	160	130	30	900
8	140	120	20	400
9	160	138	22	484
10	140	120	20	400
11	140	120	20	400
12	140	120	20	400
13	150	126	24	576
14	180	136	44	1936
15	140	120	20	400
16	170	140	30	900
17	130	120	10	100
18	150	130	20	400
19	150	126	24	576
20	180	150	30	900
			$\Sigma D = 482$	$\Sigma D^2 = 13036$

Standard Deviation $= \sqrt{\frac{\Sigma D^2 \ - \frac{(\Sigma D)^2}{n}}{n-1}} = \sqrt{\frac{13036 \ - \frac{(482)^2}{20}}{20-1}} = 8.64$

$\bar{d} = \frac{\Sigma D}{n} = \frac{482}{20} = 24.1$

$SE = \frac{SD}{\sqrt{n}} = \frac{8.64}{\sqrt{20}} = 1.93$

$t = \frac{\bar{d}}{SE} = \frac{24.1}{1.93} = 12.48$

t = 12.48

ANNEXURE II -2

Level of Diastolic Blood Pressure among Elderly with Hypertension in Experimental Group

S.No	Pre test (x_1)	Post test (x_2)	$X_1-X_2=D$	D^2
1	90	80	10	100
2	110	88	22	484
3	90	80	10	100
4	100	80	20	400
5	80	80	0	0
6	90	86	4	16
7	90	84	6	36
8	90	80	10	100
9	100	84	16	256
10	90	80	10	100
11	90	84	6	36
12	84	80	4	16
13	80	84	-4	16
14	90	80	10	100
15	90	80	10	100
16	100	88	12	144
17	90	80	10	100
18	90	84	6	36
19	100	88	12	144
20	100	86	14	196
			$\Sigma D = 188$	$\Sigma D^2 = 2480$

Standard Deviation $= \sqrt{\frac{\Sigma D^2 \ - \frac{(\Sigma D)^2}{n}}{n-1}} = \sqrt{\frac{2480 \ - \frac{(188)^2}{20}}{20-1}} = 6.12$

$\bar{d} = \frac{\Sigma D}{n} = \frac{188}{20} = 9.4$

$SE = \frac{SD}{\sqrt{n}} = \frac{6.12}{\sqrt{20}} = 1.37$

$t = \frac{\bar{d}}{SE} = \frac{9.4}{1.37} = 6.86$

t = 6.86

ANNEXURE II -3

Level of Systolic Blood Pressure among Elderly with Hypertension in Control Group

S.No	Pre test (x_1)	Post test (x_2)	$X_1-X_2=D$	D^2
1	140	150	-10	100
2	130	140	-10	100
3	150	140	10	100
4	140	150	-10	100
5	150	140	10	100
6	180	170	10	100
7	140	130	10	100
8	140	150	-10	100
9	160	160	0	0
10	150	140	10	100
11	140	150	-10	100
12	130	140	-10	100
13	150	140	10	100
14	140	140	0	0
15	160	170	-10	100
			ΣD =-10	ΣD^2 =1300

Standard Deviation $= \sqrt{\frac{\Sigma D^2 - \frac{(\Sigma D)^2}{n}}{n-1}} = \sqrt{\frac{1300 - \frac{(-10)^2}{15}}{15-1}} = 9.61$

$\bar{d} = \frac{\Sigma D}{n} = \frac{-10}{15} = -0.67$

SE $= \frac{SD}{\sqrt{n}} = \frac{9.61}{\sqrt{15}} = 2.48$

t $= \frac{\bar{d}}{SE} = \frac{-0.67}{2.48} = -0.27$

t = 0.27

ANNEXURE II -4

Level of Diastolic Blood Pressure among Elderly with Hypertension in Control Group

S.No	Pre test (x_1)	Post test (x_2)	$X_1-X_2=D$	D^2
1	90	90	0	0
2	90	90	0	0
3	90	90	0	0
4	80	90	-10	100
5	80	90	-10	100
6	80	90	-10	100
7	90	90	0	0
8	90	80	10	100
9	90	90	0	0
10	90	80	10	100
11	90	90	0	0
12	90	88	2	4
13	80	80	0	0
14	90	100	-10	100
15	100	90	10	100
			ΣD =-8	ΣD^2 =704

Standard Deviation $= \sqrt{\frac{\Sigma D^2 - \frac{(\Sigma D)^2}{n}}{n-1}} = \sqrt{\frac{704 - \frac{(-8)^2}{15}}{15-1}} = 7.07$

$\bar{d} = \frac{\Sigma D}{n} = \frac{-8}{15} = -0.53$

SE $= \frac{SD}{\sqrt{n}} = \frac{7.07}{\sqrt{15}} = 1.83$

t $= \frac{\bar{d}}{SE} = \frac{-0.53}{1.83} = -0.29$

t = 0.29

ANNEXURE III

Association between the Level of Blood Pressure Before Intervention with Selected Demographic Variables.

Chi-Square (with Yates correction) test was used to check the association between the level of blood pressure (Systolic and Diastolic) before the intervention with selected demographic variables.

$$\chi^2 = \sum \frac{\left((O-E)-0.5\right)^2}{E}$$

where,

O = Observed value

E = Expected value in corresponding category

E = $\frac{RT \times CT}{N}$

RT = Row total

CT = Column total

N = Number of samples

0.5 = Yates correction value

ANNEXURE III - 1

Association between the Level of Systolic Blood Pressure before Intervention and Age among Elderly with Hypertension

Age	Mild	Moderate	Severe	TOTAL
61-70	1	8	9	18
71-80	3	8	2	13
81 years & above	0	4	0	4
TOTAL	4	20	11	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
1	$E_1=\frac{4\times18}{35}$	2.057	-1.057	-1.557	2.424249	1.178
8	$E_8=\frac{20\times18}{35}$	10.285	-2.285	-2.785	7.756225	0.754
9	$E_9=\frac{11\times18}{35}$	5.657	3.343	2.843	8.082649	1.428
3	$E_3=\frac{13\times4}{35}$	1.485	1.515	1.015	1.030225	0.693
8	$E_8=\frac{13\times20}{35}$	7.428	0.572	0.072	0.005184	0.0006
2	$E_2=\frac{13\times11}{35}$	4.085	-2.085	-2.585	6.682225	1.635
0	$E_0=\frac{4\times4}{35}$	0.457	-0.457	-0.957	0.915849	2.004
4	$E_4=\frac{4\times20}{35}$	2.285	1.715	1.215	1.476225	0.646
0	$E_0=\frac{4\times11}{35}$	1.257	-1.257	-1.757	3.087049	2.455
Σx^2						10.793

ANNEXURE III - 2

Association between the Level of Systolic Blood Pressure before Intervention and Gender among Elderly with Hypertension

Gender	Mild	Moderate	Severe	TOTAL
Male	1	4	3	8
Female	3	16	8	27
TOTAL	4	20	11	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
1	$E_1=\frac{4\times 8}{35}$	0.914	0.086	-0.414	0.171396	0.187
4	$E_4=\frac{20\times 8}{35}$	4.571	-0.571	-1.071	1.147041	0.250
3	$E_3=\frac{11\times 8}{35}$	2.514	0.486	-0.014	0.000196	0.001
3	$E_3=\frac{27\times 4}{35}$	3.085	-0.085	-0.585	0.342225	0.110
16	$E_{16}=\frac{20\times 27}{35}$	15.428	0.572	0.072	0.005184	0.0003
8	$E_8=\frac{27\times 11}{35}$	8.485	-0.485	-0.985	0.970225	0.114
Σx^2						0.6623

ANNEXURE III - 3

Association between the Level of Systolic Blood Pressure before Intervention and Education among Elderly with Hypertension

Education	Mild	Moderate	Severe	TOTAL
Illiterate	4	12	3	19
Primary	0	8	5	13
High School	0	0	3	3
TOTAL	4	20	11	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
4	$E_4=\frac{4\times19}{35}$	2.171	1.829	1.329	1.766241	0.813
12	$E_{12}=\frac{20\times19}{35}$	10.857	1.143	0.643	0.413449	0.038
3	$E_3=\frac{11\times19}{35}$	5.971	-2.971	-3.471	12.047841	2.017
0	$E_0=\frac{13\times4}{35}$	1.485	-1.485	-1.985	3.940225	2.653
8	$E_8=\frac{20\times13}{35}$	7.428	0.572	0.072	0.005184	0.0006
5	$E_5=\frac{11\times13}{35}$	4.085	0.915	0.415	0.172225	0.042
0	$E_0=\frac{4\times3}{35}$	0.342	-0.342	-0.842	0.708964	2.072
0	$E_0=\frac{20\times3}{35}$	1.714	-1.714	-2.214	4.901796	2.859
3	$E_3=\frac{11\times3}{35}$	0.942	2.058	1.558	2.427364	2.576
Σx^2						13.0706

ANNEXURE III - 4

Association between the Level of Systolic Blood Pressure before Intervention and Religion among Elderly with Hypertension

Religion	Mild	Moderate	Severe	TOTAL
Hindu	2	12	9	23
Christian	2	8	2	12
TOTAL	4	20	11	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(0-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
2	$E_2=\frac{4\times23}{35}$	2.628	-0.628	-1.128	1.272384	0.484
12	$E_{12}=\frac{20\times23}{35}$	13.142	-1.142	-1.642	2.696164	0.205
9	$E_9=\frac{11\times23}{35}$	7.228	1.722	1.272	1.617984	0.223
2	$E_2=\frac{12\times4}{35}$	1.371	0.629	0.129	0.016641	0.012
8	$E_8=\frac{20\times12}{35}$	6.857	1.143	0.643	0.413449	0.060
2	$E_2=\frac{12\times11}{35}$	3.771	-1.771	-2.271	5.157441	1.367
Σx^2						2.351

ANNEXURE III - 5

Association between the Level of Systolic Blood Pressure before Intervention and Personal Habits among Elderly with Hypertension

Personal Habits	Mild	Moderate	Severe	TOTAL
Smoking	0	3	2	5
Betel Chewing	0	3	0	3
No habits	2	15	10	27
TOTAL	2	21	12	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
0	$E_0=\frac{2\times5}{35}$	0.285	-0.285	-0.785	0.616225	2.162
3	$E_3=\frac{21\times5}{35}$	3	0	-0.5	0.25	0.083
2	$E_2=\frac{12\times5}{35}$	1.714	0.286	-0.214	0.045796	0.026
0	$E_0=\frac{2\times3}{35}$	0.171	-0.171	0.671	0.450241	2.632
3	$E_3=\frac{21\times3}{35}$	1.8	1.2	0.7	0.49	0.272
0	$E_0=\frac{12\times3}{35}$	1.028	-1.028	-1.528	2.334784	2.271
2	$E_2=\frac{2\times27}{35}$	1.542	0.458	-0.042	0.001764	0.001
15	$E_{15}=\frac{21\times27}{35}$	16.2	-1.2	-1.7	2.89	0.178
10	$E_{10}=\frac{12\times27}{35}$	9.257	0.743	0.243	0.059049	0.006
Σx^2						7.631

ANNEXURE III - 6

Association between the Level of Systolic Blood Pressure before Intervention and Family History of Hypertension among Elderly with Hypertension

Family History of Hypertension	Mild	Moderate	Severe	TOTAL
Yes	0	0	1	1
No	4	20	10	34
TOTAL	4	20	11	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
0	$E_0=\frac{4\times1}{35}$	0.114	-0.114	-0.614	0.376996	3.306
0	$E_0=\frac{20\times1}{35}$	0.571	-0.571	-1.071	1.147041	2.008
1	$E_1=\frac{11\times1}{35}$	0.314	-0.314	-0.814	0.662596	2.110
4	$E_4=\frac{34\times4}{35}$	3.885	0.115	-0.385	0.148225	0.038
20	$E_{20}=\frac{20\times34}{35}$	19.428	0.572	0.072	0.005184	0.0002
10	$E_{10}=\frac{34\times11}{35}$	10.685	-0.685	-1.185	1.404225	0.131
Σx^2						7.5932

ANNEXURE III - 7

Association between the Level of Diastolic Blood Pressure before Intervention and Age among Elderly with Hypertension

Age	Mild	Moderate	Severe	TOTAL
61-70	2	9	7	18
71-80	3	10	0	13
81 years & above	2	2	0	4
TOTAL	7	21	7	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(0-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
2	$E_2=\frac{7\times18}{35}$	3.6	-1.6	-2.1	4.41	1.225
9	$E_9=\frac{21\times18}{35}$	10.8	-1.8	-2.3	5.29	0.489
7	$E_7=\frac{7\times18}{35}$	3.6	3.34	2.9	8.41	2.336
3	$E_3=\frac{13\times7}{35}$	2.6	0.4	-0.1	0.01	0.003
10	$E_{10}=\frac{13\times21}{35}$	7.8	2.2	1.7	2.89	0.370
0	$E_0=\frac{13\times7}{35}$	2.6	-2.6	-3.1	9.61	3.696
2	$E_2=\frac{4\times7}{35}$	0.8	1.2	0.7	0.49	0.612
2	$E_2=\frac{4\times21}{35}$	2.4	-0.4	-0.9	0.81	0.337
0	$E_0=\frac{4\times7}{35}$	0.8	-0.8	-1.3	1.69	2.112
Σx^2						11.18

ANNEXURE III - 8

Association between the Level of Diastolic Blood Pressure before Intervention and Gender among Elderly with Hypertension

Gender	Mild	Moderate	Severe	TOTAL
Male	0	4	4	8
Female	7	17	3	27
TOTAL	7	21	7	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
0	$E_0=\frac{7\times8}{35}$	1.6	-1.6	-2.1	4.41	2.756
4	$E_4=\frac{21\times8}{35}$	4.8	-0.8	-1.3	1.69	0.352
4	$E_4=\frac{7\times8}{35}$	1.6	2.4	1.9	3.61	2.256
7	$E_7=\frac{27\times7}{35}$	5.4	1.6	1.1	1.21	0.224
17	$E_{17}=\frac{21\times27}{35}$	16.2	0.8	0.3	0.09	0.005
3	$E_3=\frac{27\times7}{35}$	5.4	-2.4	-2.9	8.41	1.557
Σx^2						7.15

ANNEXURE III - 9

Association between the Level of Diastolic Blood Pressure before Intervention and Education among Elderly with Hypertension

Education	Mild	Moderate	Severe	TOTAL
Illiterate	3	15	1	19
Primary	4	4	5	13
High School	0	2	1	3
TOTAL	7	21	7	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
3	$E_3=\frac{7\times19}{35}$	3.8	-0.8	-1.3	1.69	0.444
15	$E_{15}=\frac{21\times19}{35}$	11.4	3.6	3.1	9.61	0.842
1	$E_1=\frac{7\times19}{35}$	3.8	-2.8	-3.3	10.89	2.865
4	$E_4=\frac{13\times7}{35}$	2.6	1.4	0.9	0.81	0.311
4	$E_4=\frac{21\times13}{35}$	7.8	-3.8	-4.3	18.49	2.370
5	$E_5=\frac{7\times13}{35}$	2.6	2.4	1.9	3.61	1.388
0	$E_0=\frac{7\times3}{35}$	0.6	-0.6	-1.1	1.21	2.016
2	$E_2=\frac{21\times3}{35}$	1.8	0.2	-0.3	0.09	0.05
1	$E_1=\frac{7\times3}{35}$	0.6	0.4	-0.1	0.01	0.016
Σx^2						10.302

ANNEXURE III - 10

Association between the Level of Diastolic Blood Pressure before Intervention and Religion among Elderly with Hypertension

Religion	Mild	Moderate	Severe	TOTAL
Hindu	3	13	7	23
Christian	4	8	0	12
TOTAL	7	21	7	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(0-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
3	$E_3=\frac{7\times23}{35}$	4.6	-1.6	-2.1	4.41	0.958
13	$E_{13}=\frac{21\times23}{35}$	13.8	-0.8	-1.3	1.69	0.122
7	$E_7=\frac{7\times23}{35}$	4.6	2.4	1.9	3.61	0.784
4	$E_4=\frac{12\times7}{35}$	2.4	1.6	1.1	1.21	0.504
8	$E_8=\frac{21\times12}{35}$	7.2	0.8	0.3	0.09	0.012
0	$E_0=\frac{12\times7}{35}$	2.4	-2.4	-2.9	8.41	3.504
Σx^2						5.884

ANNEXURE III - 11

Association between the Level of Diastolic Blood Pressure before Intervention and Personal Habits among Elderly with Hypertension

Personal Habits	Mild	Moderate	Severe	TOTAL
Smoking	1	3	1	5
Betel Chewing	1	2	0	3
No habits	7	15	5	27
TOTAL	9	20	6	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
1	$E_1=\frac{9\times5}{35}$	1.285	-0.285	-0.785	0.616225	0.479
3	$E_3=\frac{20\times5}{35}$	2.857	0.143	-0.357	0.127449	0.044
1	$E_1=\frac{6\times5}{35}$	0.857	0.143	-0.357	0.127449	0.148
1	$E_1=\frac{9\times3}{35}$	0.771	0.229	-0.271	0.073441	0.095
2	$E_2=\frac{20\times3}{35}$	1.714	0.286	-0.214	0.045796	0.026
0	$E_0=\frac{6\times3}{35}$	0.514	-0.514	-1.014	1.028196	2.000
7	$E_7=\frac{9\times27}{35}$	6.942	0.058	-0.442	0.195364	0.028
15	$E_{15}=\frac{20\times27}{35}$	15.428	-0.428	-0.928	0.8861184	0.055
5	$E_5=\frac{6\times27}{35}$	4.628	0.372	-0.128	0.016384	0.003
Σx^2						2.878

ANNEXURE III - 12

Association between the Level of Diastolic Blood Pressure before Intervention and Family History of Hypertension among Elderly with Hypertension

Family History of Hypertension	Mild	Moderate	Severe	TOTAL
Yes	0	0	1	1
No	7	21	6	34
TOTAL	7	21	7	35

O	$E=\frac{RT\times CT}{N}$	E	O – E	(O-E) – 0.5	$[(O-E)-0.5]^2$	$\frac{[(O-E)-0.5]^2}{E}$
0	$E_0=\frac{7\times1}{35}$	0.2	-0.2	-0.7	0.49	2.45
0	$E_0=\frac{21\times1}{35}$	0.6	-0.6	-1.1	1.21	2.016
1	$E_1=\frac{7\times1}{35}$	0.2	0.8	0.3	0.09	0.45
7	$E_7=\frac{34\times7}{35}$	6.8	0.2	-0.3	0.09	0.038
21	$E_{21}=\frac{21\times34}{35}$	20.4	0.6	0.1	0.01	0.0004
6	$E_6=\frac{34\times7}{35}$	6.8	-0.8	-1.3	1.69	0.248
Σx^2						5.1774

ANNEXURE-IV

Content Validity Index

Item	Expert							Number of Agreements	I-CVI
	1	2	3	4	5	6	7		
Section-A									
Demographic Variables									
1.	4	4	4	4	4	4	4	7	0.98
2.	4	4	4	4	4	4	4	7	0.98
3.	4	4	4	4	3	4	3	7	0.98
4.	4	4	4	4	4	4	3	7	0.98
5.	4	3	3	4	4	2	3	6	0.84
6.	4	4	4	4	4	4	4	7	0.98
7.	4	4	4	4	4	4	2	6	0.84
8.	4	4	4	4	3	3	4	7	0.98
Health History									
1.	4	4	4	4	4	4	4	7	0.98
2.	4	4	4	4	4	4	4	7	0.98
3.	4	4	3	4	2	4	4	6	0.84
4.	4	4	4	4	4	4	4	7	0.98

யோக நித்ரா – செய்முறை

- சாந்தி ஆசனம் (அ) சவாசனம்
  கால்களைப் பிரித்து, கைகள் தொடை பகுதி அருகில் வைத்து உள்ளங்கைகள் வானத்தைப் பார்த்து வைக்கவும். கண்களை மூடி உடலை தளர்த்திய நிலையில் படுக்கவும்.

- உள் மூச்சைக் கவனிக்கவும்.

- ஆழ்ந்த மூச்சு எடுத்து விடவும்.

- மூச்சு எடுக்கும் பொழுது வயிற்று பகுதியைக் கவனிக்கவும்.

- மூச்சு எடுக்கும் பொழுது வயிற்று பகுதி பெரிதாவதையும், மூச்சு விடும் பொழுது வயிற்றுப் பகுதி நன்கு சுருங்குவதையும் கவனிக்கவும்.

- நுரையீரல் சுருங்கி விரிவதை கவனிக்கவும்.

- அமைதி, அமைதி, அமைதி

- மெதுவாக உங்கள் வாழ்க்கையில் நடந்த மகிழ்ச்சியான விஷயங்களை நினைத்துப் பார்க்கவும், சந்தோஷமான இன்பம் தரக்கூடிய விஷயம்.

- மெதுவாக உங்கள் குணக்கோளாறுகளை பட்டியல் இடுங்கள். உங்கள் கோபம், ஆசை, அகங்காரம் போன்ற விஷயங்களால் நீங்களும் மன கஷ்டப்பட்டு, பிறரையும் காயப்படுத்தின

தருணங்களை எண்ணிப் பாருங்கள். இக் குணக்கோளாறுகளை உங்களை விட்டு வெளியேற்றுங்கள்.

மூச்சு எடுக்கும் பொழுது நல்ல விஷயங்கள், நல்ல எண்ணங்கள், நல்ல செயல்கள் உங்களுக்குள் செல்லட்டும். மூச்சை வெளியே விடும்பொழுது கெட்ட எண்ணங்கள், எதிர்மறை விஷயங்கள் உங்களை விட்டு வெளியேறட்டும். நீண்ட ஆழமான மூச்சை விடவும். அமைதி, அமைதி, அமைதி.

- பாதம் முதல் உச்சந்தலை வரை அனைத்து உறுப்புகளும் அமைதியாக சக்தியடைவதை கவனியுங்கள்.

அமைதி, அமைதி, அமைதி

- உங்கள் மன அமைதியை ஆழமாகக் கவனியுங்கள். இறைவனின் ஆசிர்வாதம், இறைவனின் சக்தி உங்களுக்குள் செல்வதை அமைதியாக அனுபவியுங்கள்.

அமைதி, அமைதி, அமைதி

- மெதுவாக உங்கள் உடல் சுயநினைவிற்கு திரும்பட்டும். மெதுவாக வலது கையை தலைக்கு மேல் கொண்டு சென்று தரையில் வையுங்கள். மெதுவாக வலதுபுறம் திரும்பி படுத்து இரு கைகளையும் தரையில் ஊன்றி எழுந்து உட்காருங்கள்.

- உள்ளங்கையை நன்றாகத் தேய்த்து, கண்களை சுற்றி மெதுவாக தேய்த்து கொடுக்கவும், மறுபடியும் கழுத்து பகுதி, முதுகு பகுதி, முகம் முழுவதும் இவ்வாறு செய்யுங்கள். கைகளைப் பிரித்து கண்களைத் திறந்து மெதுவாக உள்ளங்கைகளைப் பார்க்கவும்.